AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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IN THE SNOW.— *Engraved for the American Agriculturist.*

This picture is from a noted steel engraving, which we hardly need say is European, as every detail of wagon, horses, and men assert the scene to be foreign—all except the snow, that has a home-like look, but snow storms are much alike wherever they occur. Still there is a difference in snow and snow storms. Those large light flakes that float leisurely downward, "as if the celestial geese were being plucked"—the apt simile of some one—those fluffy, pretentious flakes make a great show, but they do not make the great snows; they indicate dampness and foretell a not very distant cessation of the fall. It is the little glistening scales, so fine that they make but little show in the air, that "mean business;" it is those that when they are sifting down so dry as to fairly rattle one another as they seek out every crevice and pack closely, that come with our serious storms—those of the kind always called "old fashioned," though we never hear of a "new fashioned" snow storm. To be snow-beleagued if not lost in the snow, is an experience more pleasant to look back upon, than in its immediate enjoyment. What a desolate blankness spreads in every direction. There was no evidence of human existence to cover up except a trail that marked the course; unbroken, trackless whiteness everywhere. No food for horses, very little food for men, two hundred miles to the nearest known help! It does not require many inches of snow in a roadless country to make wagons useless as vehicles of locomotion. Snow storms there away at the present day defy the iron horse—even four of them tandem, and what could our poor, jaded, skeleton horses do? Like the horses in the picture, they gave it up, and looked at us with a dazed expression, as if to say—"Well! what next?" How beautiful these dry snows are! What an illustration of the power of accumulation. Each tiny flake so insignificant in size, yet combined, they defy the most powerful engines. How exquisite their forms, and how varied! Not an angle since the first snow flake fell until now but measures exactly 60° or its equivalent. Then to think that this exquisite sculpturing is repeated times as far beyond our comprehension as are the distances of the farthest stars. "But did you think of all this when snowed in?" Oh, no! we took an account of our salt pork and hard-tack.

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Calendar for February, 1880.

Day of Month.	Day of Week.	Boston, N England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	7 14	5 14	11 26	7 10	5 18	11 23	7 6	5 22	11 20
2	M	7 13	5 15	morn	7 9	5 19	morn	7 5	5 23	morn
3	T	7 12	5 17	0 40	7 8	5 20	0 35	7 5	5 24	0 31
4	W	7 10	5 18	1 53	7 7	5 21	1 48	7 4	5 25	1 43
5	T	7 9	5 19	3 4	7 6	5 23	2 59	7 3	5 26	2 52
6	F	7 8	5 21	4 8	7 5	5 24	4 2	7 2	5 27	3 56
7	S	7 7	5 22	5 2	7 4	5 25	4 57	7 0	5 28	4 51
8	S	7 6	5 23	5 47	7 3	5 26	5 43	6 59	5 30	5 38
9	M	7 5	5 25	6 23	7 1	5 28	6 20	6 58	5 31	6 17
10	T	7 3	5 26	sets	7 0	5 29	sets	6 57	5 32	sets
11	W	7 2	5 27	7 16	6 59	5 30	7 11	6 56	5 33	7 2
12	T	7 1	5 28	8 17	6 58	5 31	8 17	6 55	5 34	8 17
13	F	6 59	5 30	9 23	6 57	5 32	9 22	6 54	5 35	9 20
14	S	6 58	5 31	10 28	6 55	5 34	10 25	6 53	5 36	10 22
15	S	6 56	5 32	11 30	6 54	5 35	11 26	6 51	5 37	11 23
16	M	6 55	5 33	morn	6 53	5 36	morn	6 50	5 39	morn
17	T	6 54	5 35	0 35	6 51	5 37	0 28	6 49	5 40	0 23
18	W	6 52	5 36	1 32	6 50	5 38	1 27	6 47	5 41	1 21
19	T	6 51	5 37	2 26	6 48	5 39	2 23	6 46	5 42	2 16
20	F	6 49	5 39	3 19	6 47	5 41	3 13	6 45	5 43	3 7
21	S	6 48	5 40	4 3	6 46	5 42	3 58	6 44	5 44	3 48
22	S	6 46	5 41	4 42	6 44	5 43	4 37	6 42	5 45	4 32
23	M	6 45	5 42	5 15	6 41	5 44	5 11	6 41	5 46	5 7
24	T	6 43	5 44	5 44	6 43	5 45	5 41	6 40	5 47	5 39
25	W	6 42	5 45	rises	6 40	5 46	rises	6 38	5 48	rises
26	T	6 40	5 46	6 51	6 38	5 47	6 51	6 37	5 49	6 52
27	F	6 39	5 47	8 2	6 37	5 48	8 1	6 36	5 50	8 0
28	S	6 38	5 48	9 15	6 36	5 49	9 12	6 35	5 51	9 10
29	S	6 37	5 49	10 28	6 35	5 50	10 25	6 34	5 52	10 22

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
3d Quart.	3	10 55 mo.	10 43 mo.	10 31 mo	10 19 mo.	9 49 mo.
New M'n	10	6 33 mo.	6 21 mo.	6 9 mo	5 57 mo.	5 27 mo.
1st Quart	17	11 1 ev.	10 49 ev.	10 37 ev.	10 25 ev.	9 55 ev.
Full M'n	25	8 38 ev.	8 26 ev.	8 14 ev.	8 2 ev.	7 32 ev.

AMERICAN AGRICULTURIST.

NEW YORK, FEBRUARY, 1880.

Hints for the Work of the Month.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every month, from the latest experience and observations, by practical men in each department.*]

The Last Month of Winter has begun for the Northern farmer, while in the Southern States spring has already opened; whatever is to be done in the way of preparation can be no longer delayed. A late beginning makes a late season, and to regain time lost now, may be found impossible hereafter. A farmer who is behindhand is a prey to accidents and misfortunes of the season, and often finds his labor increased, and the results lessened by reason of his own carelessness. On the other hand, the forward man gets the benefit of every advantage, and many disadvantages of season are safely passed over, because he is ahead of them.

Hauling out Manure.—While the ground is hard or covered with snow, the manure heaps can be hauled to the fields with the least trouble. Those who have profited by our hints for the past few months, will have the manure in good condition for hauling out now; others will have it lying around loose and frozen, and consequently useless for some time yet.

The Finest Manure is made by turning the heap over twice. To do this, begin at each end of the pile, and throw off the manure to a distance of three feet, building up the new heaps, and placing the coarsest manure in the center. Then proceed until two heaps are made. These will soon heat, and a month or so afterwards the process may be reversed and the two heaps made into one again.

Cabbages.—Every farmer should raise cabbages, both early and late. For early kinds, the seeds should be sown in a hot-bed this month, unless plants started last fall have been kept through the winter in cold-frames. Directions for making a hot-bed will be found under the Notes for Kitchen and Market Garden. It is not a waste of manure to use it for a hot-bed, as it will be all the better for application in the garden after it has served this purpose.

Spring Oats.—In the South, if spring oats have not already been sown, they will require immediate attention. Not having time to tiller, like winter oats, 2½ to 3 bushels of seed per acre will be needed. A late sowing may yield an early harvest, by the help of a liberal fertilizing with a good artificial manure.

Early Planting is advisable for cotton, corn, and corn-fodder. For these crops, the ground should be in course of preparation this month, that advantage may be taken of good weather for planting so soon as it comes next month.

Spring Wheat.—In many localities spring wheat will succeed if it is sown early. Open weather this month, may permit plowing and sowing, although the under soil is still frozen. A cold spell may freeze the ground, or cover it with snow, but the seed is safe, the work is done; and one may rest contented, while others are grumbling.

Plowing should be done, only when the soil will crumble loosely; when the plow smears the upturned surface, the soil will be injured. While earliness and forehandedness are commendable, one should make haste with caution.

Look Ahead!—A farmer should always think in advance of his work. The whole plan must be laid out in the head, before the hands are put to it. There is time yet left for thinking over what should be done in the next two or three busy months.

Grass in the South.—A great need in the South is grass for early grazing and hay. Some of the native grasses that have been fought and struggled with for years as weeds are now found to be of great value. By smoothing off a piece of grassy land, and using some fertilizer and encouraging the growth, a home supply of hay may be secured. It is often the case that a treasure may lie neglected under our feet, and some of the Southern grasses, long neglected, can be turned to profitable use.

Grass in the North is not made as available as it might. An opinion prevails that grass lands can not be kept in permanently good condition. Yet there are in many localities plots and tracts of grass that are very old and show no signs of failure. What has been done once in this way can be done again. A permanent pasture or meadow is invaluable. Why can not we try to make and keep them? This is a subject worthy the most careful study.

Why can not we Grow Larger Crops?—There are localities where it may pay to grow small crops cheaply, where one may skin the land for a few years and leave it, just as in some places cattle are or have been killed for their hides and the carcasses left to decay. But every year these localities are growing more and more distant in the West, and in time land will be too valuable to be used in so wasteful a manner. In central and eastern localities the future prosperity of the farmers will depend upon the growth of larger crops by the expenditure of more labor on the land. To reach this end will be a work of time, but it will never be reached unless a beginning is made, and there was never a more propitious time to begin than now.

Values are Increasing.—Every relic of the long continued depression—the seven lean years—now happily gone by, is passing away. Prices are advancing, and every purchased thing costs considerably more than a year ago. The farmer who values his land and stock may justly put up the figures from 25 to 50 per cent. His income must be made to increase in proportion, and this must be done to a great extent by increasing in every possible way the productive value of his property.

Better Stock Must be Kept.—The right stock too must be kept in the right place. The choice and management of animals require an accurate knowledge which must come from outside of his own farm practice. A farmer can not test these things for himself and run the risk of losses that would be ruinous to him. All this has been done and recorded in books and agricultural papers, together with much other indispensable information, so that

A Farmer Must be a Reading Man; else he can never hope to be as successful as he should be. A DOZEN VOLUMES OF THE *American Agriculturist* WILL FORM A NEARLY COMPLETE CYCLOPÆDIA of agricultural, mechanical, and other useful knowledge for any one who lives by cultivating the soil. The work of the farm, garden, and household has been discussed, described, and explained in these volumes for more than 30 years back, in a full, fresh, and instructive manner; with them one can learn how to improve his own stock or where to procure

the best animals, as well as to improve every method of working, enabling him to meet nearly every question and demand that may naturally arise.

Keep the Good Calves.—As the cows come in, the best of the heifers may be selected for raising. There can be no better way to improve the stock of cows than to use a good bull and keep the best calves, well feeding and caring for them until matured. After these become cows a selection can again be made for breeding, and only the best retained. In a few years the value of dairy cows may be doubled by this careful practice of selection.

Feeding and Care of Stock.—On this subject there is nothing to add to the hints given last month. Prof. Atwater's articles on feeding (see page 61) should be studied until they are well understood.

Vermin.—The poultry house, if closely examined, may be found to swarm with lice. A gray mealy powder may be seen on the roosts, in crevices, and in the corners and joints of the building. Take a common squirt can filled with kerosene oil and inject the oil into every crevice about the house. Repeat this process if it is found necessary, and very soon the fowls will be free from these insect pests.

Young Chickens.—Early chickens which can be reared easily if proper care is given, may be kept in a glass covered coop protected at night by covering with straw. If severe cold is feared, heat a couple of bricks hot in the oven, wrap them in a piece of carpet, and put them in the coop. A large can or jug of hot water is also a very good warmer.

Fowls will need the best food if eggs are desired. Wheat steeped in boiling water, and given hot, and hot baked potatoes crushed with a masher, are as good food as can be given; water slightly warmed with a small quantity of Sulphate of Iron (copperas) in it, will be useful. Allspice mixed with cornmeal mush is an excellent condiment, and by no means costly. Laudanum in 10 drop doses has been found a remedy for the cholera, or poultry intestinal fever, which has destroyed so many flocks.

Geese and Ducks.—These are profitable birds in some cases, and may be kept where there is cheap grazing. Half a dozen geese will soon fill a good sized feather bed or a pair of pillows. The white ducks are perhaps equally useful in this way. Both of these will now begin to lay, but must be closely watched and kept up at nights or they will drop their eggs abroad. The eggs should be gathered and kept in a cool but not cold place until they are wanted for setting. A house suitable for geese or ducks is illustrated and described on page 60.

Notes on Orchard and Garden Work.

In the Northern Atlantic States the winter up to the beginning of the year has been an exceptionally mild one, though some localities have experienced the severity of which European gardeners and orchardists are complaining. It would be better if we could have the weather continuously so cold that all vegetation would remain dormant, but that is beyond our control, and we can do but little to avoid or repair the damage caused by unseasonable prolonged mild weather, followed by severe cold. With the majority of hardy trees and shrubs, it makes but little difference how severe the winter, provided the cold comes on when vegetation is thoroughly dormant, but when a mild spell is succeeded by a sudden cold snap, the effects are most disastrous, especially upon the more excitable trees, such as peaches and cherries. When this occurs, and the blossom buds are fairly injured, nothing can be done to remedy the damage, and the best that one can do is to grow well formed trees during the coming season, in the hope that another winter may deal more kindly with them. To many of our readers spring begins with February, and it is everywhere proverbially the "short month," hence the plans for the year should be fixed upon by this time, and the tools, seeds, plants, etc., should be ordered, that they may be on hand when wanted. Manure is an important matter to every cultivator, and none should go to waste for lack of sufficient absorbents, such as muck, leaves, cut litter, etc. Many who write us for information might find an answer to their queries did they look over the Notes in former volumes, and given more in full than is practicable in an answer by letter. Of course this refers to those who have been our readers for some years.

Orchard and Nursery.

Renovating old Orchards is an important work at this season, and was treated somewhat at length in the January Notes, to which we refer the reader.

Grafting.—If old trees produce poor or even indifferent fruit, and they are still sound and vigorous, they may be made productive and valuable by grafting good sorts upon them. This work should be done just as the buds begin to swell. If the tree is a large one, only a portion of it should be grafted the first season, beginning with the central part of the head. Great care should be taken that the grafts are of an excellent variety. It is a common notion among those who do not think about the matter, that the mere operation of grafting somehow benefits the tree. The grafted tree is in fact a new tree, all of the bearing parts of the old tree are cut away, and a new head is planted, so to speak, upon the old one. Hence the new top or head will be of the kind that is placed there, and unless good kinds are selected, grafting will be useless.

Grafting is planting a cutting in another tree instead of in the soil. When we plant a cutting in the soil, it forms roots of its own, and the tree will be all of one kind. When we graft, the cutting unites with a tree already having roots, and the top, which grows from the tree, will be of one kind, and the lower part of the tree will be of another.

Who can Graft?—There are men who go about the country doing grafting, some are very excellent and others are bunglers, but there is no need of employing any one. Any boy who can make a willow whistle can learn to graft, and every boy should be able to do it. We gave a full account of several kinds of grafting in May, 1869, and of other kinds in April, 1877, which numbers may be referred to. To answer a number of inquiries, we give here a few brief directions for *cleft grafting*, which is the easiest kind of grafting, and the one most generally practised, though it is by no means the best.

Getting Ready.—If cions are not already cut, lose no time in getting them. They may be bought at most nurseries. If you cut them yourself, be sure that the tree from which they are taken is of the right kind. Cut twigs of last season's growth only, a foot or less long; if cutting more than one kind, tie up one sort and mark it before beginning with another. Tie the cions in bundles, with their lower ends even, attach a label to them, or cut numbers on one of the cions in the parcel, to correspond with a list, lay them in a box, with damp sawdust or damp moss all around and over them, and keep in a cool place until wanted. If sawdust or moss is not at hand, set the cion in a box of slightly damp earth, covering their lower ends well.

Implements.—A fine saw will be needed; a regular pruning saw is best, but any other will answer if it has rather fine teeth with a wide set. Two good knives, one very strong and heavy, the other smaller, and made and kept very sharp. A hardwood wedge made of a stick of hickory about 6 inches long and half an inch or so thick; form at one end this wedge, beginning at two inches from the end and working it down to a point. A small mallet will be needed—a billet of wood will do.

Other Matters.—Grafting wax will be wanted; it may be bought, but it is easily made; melt together in any old iron vessel: Bees-wax, 6 oz., Rosin and Tallow 4 oz. each, over a moderate fire, stir gradually until all is melted. Take from the fire, and as soon as it begins to harden at the edges, stir until no longer liquid. Get some very old cotton stuff made thin by wear and washing; an old sheet, pillow case, or calico dress, whatever will tear in either direction with great ease; tear this into strips one or two inches wide and as long as the material will make; wind the strips upon a stick, as shown in figure 1. As one strip is wound on, put on another, putting its end *under* the end of the strip already wound, as seen in figure 1; remove all threads or ravelings in winding; when enough is wound to make the roll about 2 inches thick, tie it with a bit of thread and make another if needed; provide a wire at the other end of the stick to hang it by. Melt the grafting wax again, making it pretty hot, put in the rolls one at a time; when thoroughly penetrated by the melted wax, take out, let it drip until the wax no longer runs from it, and hang it where a few drops of wax may be caught by a paper. Treat the other rolls the same. When cool, put away from the dust. Now you are ready

To Graft.—When the buds begin to swell, put the above named things; saw, knives, wedge, mallet, a

Fig. 1.

Fig. 2.

Fig. 3.

roll of waxed cloth and the cions into a basket; besides these there will be needed a small box or cup of lard, and rags to wipe the hands upon. It is well to furnish the handle of the basket with a hook to hang it by. A step-ladder is likely to be useful. Having determined upon the place for the graft, saw off the branch, selecting a smooth place free from small branches; with the large knife smooth the cut surface, place the knife across the end and strike it gently with the mallet, to make a cleft as shown in figure 2, leaving the knife in. Now take a cion, and, with the small knife cut it to a smooth wedge, beginning near a bud, as seen in figure 3, the small piece, *B*, at the side, shows the shape of the wedge, which should be slightly thicker at one side than the other. Now the cion is ready to put in its place. If the branch to be grafted is small, but one cion is put in; the place will heal better if half the branch is cut away, as shown in figure 4. By prying the cleft open with

Fig. 4.

Fig. 5.

Fig. 6.

the point of the knife, the cion is put carefully into the cleft, the lower bud on it coming just at the cleft, as seen in figure 4, *A*. Here is the nice point; success depends upon having the inner bark of the stock and that of the cion touch as much as possible. Having the graft in place, all the cut portions are to be waxed, as will be described below.

Two Grafts are put in if the branch is over an inch through; all goes as before except two cions

are prepared, the wedge placed in the cleft, by which it is held open as the cions are adjusted as in fig. 5. Then to wax the graft, unroll from the waxed cloth a piece long enough, which will soon be learned, tear off a bit to go over the top, between the cions; then a piece to go around this, if the cloth is two inches wide it may be divided into two pieces. All that is wanted is enough to completely cover every wounded and cut part of both stock and cion (fig. 6). The cloth will stick wherever it is applied by pressing it with the fingers; grease the fingers with lard before working with the wax, and wipe them before cutting other cions. A single trial will enable one to wax a graft better than a whole page would tell. A cion with with two good buds besides the lower one is long enough.

Pruning.—Large branches may be cut away from fruit trees in mild weather. A saw should be used for this; and the cut smoothed and covered with paint or melted grafting wax. The objects in pruning an old orchard, are to remove unhealthy branches, and to thin the tops of the trees, opening them for the access of sunlight and air. In case trees have grown one-sided, they may often be brought into good shape again by judicious pruning.

Tree Planting.—The work of selecting the trees for planting should be done at once, that the nurserymen may have the orders in hand, and fill them promptly. Do not buy of tree peddlers, unless absolutely known to represent a reputable nursery. Most of them are frauds, and their statement of the value of new and high sounding varieties are fiction. A list of some of the best varieties of the various fruits, was given in the January number. Should the trees be frozen when they arrive, place them in a cool place to thaw slowly.

The Canker-Worm.—On mild days, the canker-worms may make their appearance, and the females, which are wingless and always crawl, must be prevented from ascending the tree and depositing their eggs. The devices for effecting this are numerous; they generally consist in placing some barrier around the trunk which the insects can not pass. Some have gutters of oil, others smooth surfaces which they can not travel. The simplest, and as effective as any, is stout paper smeared with tar or printer's ink. Blowing dust and dead insects, will bridge them over in time, and to be effective, they must be looked to every few days, and renewed as needed. *The Tent Caterpillar's Eggs* are deposited in rings on the small twigs of apple and other trees, near their ends, and can be readily seen on dull days; they should be cut off, taking the end of the twig, and burned, thus saving a much larger amount of work later in the season.

The Fruit Garden.

That which has been said of selecting trees, in the "Orchard and Nursery," holds equally good in small fruits of the "Fruit Garden." Select and order at once. Do not rely for a supply upon new and not thoroughly tested varieties. It is well to "take on trial," some of the most promising sorts, and if they succeed, there will be a basis for future increase by propagation. If indulged in judiciously this experimenting with the "new things," is one of the chief pleasures of the fruit garden.

Pruning that may have been left undone last fall, can be attended to now. Prune the Grape-vines on the first mild day, and long before the buds swell. The Currant and Gooseberry bushes need to have last year's growth shortened, and the old stems thinned out before they start to grow. Give an application of manure or ashes between the rows.

Strawberries may be planted in localities where the frost is out of the ground, as may also be done with

Blackberries and Raspberries, both of which start to grow very early, and are better if planted in the fall.

Kitchen and Market Garden.

The great range of climate our country presents is shown by the fact that while one gardener is looking forward for his work to commence in a month or two, another is tending his growing crops, and is thinking about markets and transportation. Wherever he may be, the successful gardener will be found in readiness for the busy season when it comes with its rush of work. Frequent inspection of the stored crops in the cellars is necessary as spring approaches to avoid loss from an excess of either heat or cold; the pits must be inspected to see that damage is not being done by mice.

Roots still in the ground, as parsnips and salsify, should be dug as the thawing of the soil will permit. Such roots are improved by freezing, being kept fresh and made sweeter, and more tender.

Cold Frames need daily attention, especially when the weather is warm, as there is danger of the plants starting too soon and being injured or killed by the return of severe cold. The sashes should be removed altogether on all mild days.

Vegetable Plants.—There are so many persons who had rather buy the plants needed for the vegetable garden, that the few who desire to obtain a reputation for always having a good supply can make the growing of them a source of considerable income. To such this is a suggestion in season. The

Hot-Bed is *the* means of obtaining early plants in large quantities. To give all the details of the construction and care is not practicable in a journal. Every one who grows vegetables for sale should have a standard work at hand for frequent reference, such as Henderson's "Gardening for Profit," Brill's "Farm Gardening and Seed Sowing," and Quinn's "Money in the Garden." Hot-beds should be started about six weeks before the time at which plants can be safely placed in the open ground—by the middle of this month for the latitude of New York City. In the *American Agriculturist* for February, 1877, the space devoted to Kitchen Garden Notes was almost entirely given up to the subject of hot-beds, and for fifteen cents, any one not possessing that back number can procure, by sending to the Publishers, a full treatment of the subject.

There is no Mystery about a hot-bed, yet farmers, and many others, do without this convenience, from some supposed difficulty in making and caring for it. Sashes, a few boards, and some horse manure, are the materials required. Regular hot-bed sashes are 3 by 6 feet, and may be bought ready glazed at the sash and blind factories; old window sashes will answer as a make-shift, but are far less convenient. Select a place sheltered by a building or fence from cold winds: dig a pit 2½ feet deep, as wide as the sashes are long, and as long as the number of sashes to be used require. Line this pit with rough boards nailed to posts driven down at the corners. The rear board should extend a foot above the surface, and the front one 4 inches above. The front or lower side should face the south. Nail strips from front to rear, for the sashes to slide upon.

Heating Material.—Put in the bottom of the pit a layer of 6 inches of leaves, or corn litter; then put on stable-manure, which should have been turned once or twice, to bring it to a state of uniform heat. Put on the manure evenly, and tramp it down; the manure should come to within six inches of the top of the pit; upon this is to be placed six inches of fine, light soil, and the seeds sown in that, or preferably put on two inches or so of common earth on which to set the boxes in which seeds are sown. Put on the sashes, and when the manure begins to heat, test it with a thermometer; when the heat is declining from 100°, seed may be sown in the soil, or the boxes in which they have been already sown should be placed in upon the surface of the hot-bed.

When the Plants are Up, give them air every day by lifting the sashes at the rear, not forgetting to shut down the sashes at night; give water as needed.

Boxes in Windows is an excellent way of starting plants for early setting, though it must necessarily be on a small scale. For a small garden a good supply may thus be procured. In sowing the seeds avoid putting them in too deep—a half-inch is ample for all, and a less depth is better for the small seeds. Press the soil closely around the seed.

Varieties to Sow.—The first plants to go into open ground are: Cabbage, Cauliflower, and Lettuce. For early cabbage, "Jersey Wakefield" is the leading variety, seconded by "Early York," and a second early is "Winningstadt," for general use. Of cauliflower, the "Early Erfurt" is standard; and the "Tennis Ball" and "Boston Market" are the favorite, leading market sorts of early lettuce.

Implements.—The time spent in repairing and painting tools is always well employed, at the same time one can take an inventory of stock and see what is needed for the coming season. A seed-sower should be in use, even in a garden of moderate extent, and now is the time to get that and other implements. In fact, there is much work during this month that comes under the head of

Getting Ready.—Bean poles may be wanted, and there is no better time than now to haul them from the woods to a convenient place near where they are to be used, and the brush for peas should be procured before the leaves start. The man who so plans that his season of work extends through the whole year rather than just a few months when the crops are growing, is the wise and successful one.

Flower Garden and Lawn.

There is not much work outside during the winter months. When heavy snows come—and they often do in February—the evergreens must be looked to, and the snow removed while it is fresh, and before it bends down and breaks the limbs. If the snow is deep it will be necessary to shovel it away from the lower branches of evergreens. If manure has not been spread upon the lawn it can be done now, but it should be well rotted and entirely free from weed seeds. Make all the plans for new paths, drives, flower-beds, etc., and if these are to be of much extent, draw up a plan or map of the grounds as a guide in the work. Cannas and other large roots stored in the cellar will need attention, and all decaying parts removed. The seeds for choice annuals should be selected, and for early growth may be started in window boxes, as noted for vegetable seeds under the Kitchen Garden.

Greenhouse and Window Plants.

This is the month when the greenhouse and window plants are most appreciated, and the care of previous months is giving its best returns.

Bulbs of Hyacinths, Narcissus, etc., may be brought from the cellar and forced into bloom; and a succession of flowers may be continued by still sowing seeds of Mignonette, Sweet Alyssum, Candy-tuft, and other annuals of a like nature.

Cuttings.—The boxes, sand, and soil for the propagation of the desired Verbenas, Geraniums, etc., will need to be provided at this time.

General Care.—*Water* as the plants are found to need it. Pay special attention to *ventilation*, that there may be a plenty of fresh air, and at the same time that the plants are not unduly exposed to sudden changes of out-door temperature. The leaving of the sashes and windows open for an hour, or even less, may so chill the plants as to injure them.

Insects.—Use tobacco water for the Green Fly; thorough washing kills the Red Spider. Mealy Bug is best treated by picking off with a pointed stick. Worms in the pots are best removed by turning the ball out when the worms may be found. Syringe all the plants thoroughly at frequent intervals.

The Jack-Ass Rabbit in California.—In speaking of the Jack-ass Rabbit in January last, we said that the animal was not found in California, a statement which is perfectly accurate, so far as concerns the animal we were writing about, but not correct according to California customs. As several California friends have pointed out what they consider an error, we will briefly state the facts, which are these; the name Jack-ass Rabbit was originally given to *Lepus Callotis*, an animal with the geographical distribution given in the article referred to. We have the high authority of Prof. Baird, for stating (*Pacific R. R. Reports, Vol. VIII, page* 591). "It has not yet been found in California." There is however, in California, and abundant there, a related species, *Lepus Californicus*, the California Hare, to which it seems the Californians have also given the name of "Jack-ass Rabbit," a name which properly belongs to another animal. We were abundantly aware of the existence of the California Hare, having hunted and eaten it; our mistake was in not knowing that this, as well as the Texan species, was called Jack-ass Rabbit; common names are a source of confusion among animals, as well as among plants.

A Capital Time

TO SECURE

MANY GOOD THINGS

AT

Trifling or No Cost.

☞ ☞ The Month of FEBRUARY has, for many years, been largely used by our readers in gathering and forwarding the names of their friends and neighbors, and, as a rule, quite as many Premium articles are sent out in acknowledgment of such favors, during this month, as during any other month of the year.

☞ ☞ This is comparatively a leisure month, and when people are beginning to think and plan for the work of the coming season, they are all the more ready to avail themselves of the helps, the hints and suggestions afforded by the pages of a Journal of this kind.

☞ ☞ Our contracts for the Premium Articles and Books, made during the low rates prevailing early last year, enable us to continue the liberal offers, despite the general advance in prices.

☞ ☞ It will be quite easy for any one to *now* obtain the names of two, three, four, and *more* persons as subscribers, and receive in return the corresponding Premiums or Books offered, at no expense save the cost of delivery, and many of the articles are delivered free.

☞ ☞ Every one persuaded to become a reader *will in reality be benefited*. It is next to impossible for one to go through a volume of this paper without getting some hints and suggestions that will be each worth many times its small cost for a year's subscription. Many will save ten-fold this cost by the warnings given in the Humbug articles.

☞ ☞ Again look over the descriptive list of the Premium Articles, and select one or more desirable articles, and then *secure* them this month.

☞ ☞ Premium Clubs of two or more names may consist of old or new subscribers, or *both;* also of English or German subscriptions.

☞ ☞ ☞ If the Illustrated Premium Sheet (32 pages) has been mislaid, or not received by any subscriber, a Postal Card request, sent to the Office, will bring another copy at once.

THERE OUGHT TO BE, in *every* neighborhood, at least a few good books on Animals and their Diseases, on General Farming, on Gardening, on Fruits, on Farm Implements, etc., and at least a few Standard Works on other subjects. These books *ought* to be accessible to all for reference in case of need, as well as for reading by all—a sort of circulating or reference library to be in charge of some one.

Never before was there so good an opportunity AS NOW *to get a collection of such Books at very small cost.* Any ten or more persons contributing $1.50 each, will *each* be supplied with the *American Agriculturist* for 1880, and **in addition, one Dollar's worth of Books** will be presented for each contributor to the fund. The books may be selected from the list of **847** Good Works named in our premium sheet. Where the subscriptions are mainly sent in for 1880, subscriptions for 1881 may be added, when desired, to increase the Library as far as possible. Many new subscribers can also be found. *Every* neighborhood may thus secure such a Library. It only needs some enterprising man, young or old, to take hold of the matter as a leader, and he will soon have plenty of *helping* hands, and heads, and hearts. If the Men neglect it, their "Better-halves," or Daughters, always foremost in good works, should take it up.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Will Present Grain Prices Advance or Decline? is the burden of many recent letters to the Editors of the *American Agriculturist*, the writers seeming to expect a positive Yes or No by "return mail." We know of no human being able to answer this question. Some hundreds of shrewd business men—those whose life-work is dealing in grain, and who carefully study the whole situation here and in Europe—are now investing their thousands, hundreds of thousands, and in some cases their millions, with reference to the rise or fall in prices during the next two to four months; and *these men are about equally ranged on the two sides of this question.* Part claim that the deficiency in Europe is so great that there will be a demand for all our surplus, at any price. These are buying and holding all the grain they can, at prices now so high that exports have come to a stand still. The other side claim that Europe will not take all our surplus unless at lower prices than now prevail, and they are contracting to deliver wheat at lower prices than are now current. So the question stands to-day. These great market "doctors disagree," and how shall laymen decide? The Elevators and Storehouses in New York, Chicago, etc., are full of this speculatively held grain. Looking the ground all over, it seems to us that there is about an *even chance either way.* We can not and will not advise any one to sell or not to sell. As for ourselves, our rule is to sell farm products at the current prices *when we are ready to sell* and want the money. If prices are likely to go up, there are watchful men ready to pay more to-day; if likely to go down, these same men would sell and not buy. Having sold and got the money, we feel "Well, so much is safe, anyway." If prices go down we say, "Lucky that we sold when we did." If they go up we say, "Well, it was just as likely to have been otherwise," and——no tears are shed.

Some Pins!—Less than fifty years ago, and that was in the boyhood of a good many of us and the manhood of not a few, the most rapid production of pins was 14 per minute per man. Now it is over 14 hundred. During 36 years past the Howe Company alone has, according to the *Derby Transcript*, made over fifty-six thousand million (56,246,400,000) pins, weighing 8,000 tons, and stuck them on some 221 million papers. These pins laid down end to end would reach over 33 times around the earth, or 830,909 miles! There are at present ten pin manufactories in this country, able to turn out, in working ten hours a day, over 18½ thousand million pins a year, which would give 365 pins to every man, woman and child in a population of fifty millions. That, however, is only one pin a day to each—a small allowance for many families. But with the facilities employed just before the time the *American Agriculturist* issued its first number, to produce the present regular supply of pins would require the constant work of over 7,000 men, and over 17,000 women and children to stick them on papers—the latter work is now all done quickly by automatic machinery.

The Money Value of Foods.—To all who are interested in this matter—and the number is very large—we recommend the careful perusal of Professor Atwater's comprehensive paper given elsewhere. *Feeding Stuffs* and *Fodder Rations* are subjects upon which much light is needed by those who have to deal practically with them.

Lettuce Disease.—"A. L.," Newark, N. J., brings a quantity of forced lettuce, as a sample of his large crop, with the sad complaint, that it is all rotting away. This lettuce disease is not a new trouble, but one that has done much havoc in market gardens, especially old ones, near large cities. The trouble is caused by a fungus, closely related to the Grape Mildew, and of which we may say more, so soon as the specimens in hand are thoroughly examined with the microscope. With our present lack of a remedy, the growing of lettuce in hotbeds had best be given up for a few years, in these places where it has proved so destructive, as is the case at Newark.

America and England.—Perhaps never before has America entered so largely into the very life of England. They may do without our ideas, political and social, but they can not do without our bread. The old land stretches out her hands to the new, and we send her food that to us, is better than bread cast upon the waters. England has suffered from short crops, while we have had enough and to spare. The results of the year will be seen next spring by a large immigration to our great West, and the now hard-worked and poorly paid British farmer will soon become an independent American.

The Wrong Street.—Messrs. Benson, Maule & Co. call attention to the fact that we last month gave their place of business as 223 Chestnut street, whereas their seed store is 223 Church street, Philadelphia.

An Improvement in Churns.—No doubt that many who have used the Blanchard Churn have thought it hardly possible to improve it. But the makers thought differently, and presented the "Improved Blanchard" at the Great Dairy Fair in December last. In this churn as formerly made, the top was flat, and the portion of cream thrown against the inside of the cover would escape churning unless care were taken to scrape it down now and then and mingle it with the rest of the cream. The improvement consists in making the top of the churn of the same shape as the bottom, thus bringing all the surface within reach of the dasher, so that no cream can escape being constantly agitated.

Keeping One Cow.—Prizes.

The Family Cow—How to Keep Her.

It is perhaps safe to say that there are a greater number of persons who keep but one cow than there are who own ten or more. No doubt many more living outside of closely built cities would gladly lessen the cost of supporting their families and at the same time add to their comforts and even luxuries by keeping a cow, did they know *how* to keep her. There is a general notion that keeping a cow requires a pasture. If a pasture is not necessary, how get along without one? One has heard that half an acre of land will supply food for a cow. How? Dairymen and farmers can learn how to treat herds as a part of general farm management, or in treatises on the dairy. There are works on cows, but none on the cow. Who knows how little land will keep a cow, and how can the most be produced on that little? It is not a question of large farming, but of high farming; not of dairy farming, but of dairy gardening. To call out the best information required to enable one to keep a single cow with the best possible results, the Publishers of the *American Agriculturist* offer

Prize Essays on Keeping One Cow.

The Essay need not discuss the selection of the cow or the differences in breeds. Let the writer assume that one has a cow—the best he can get, or his means allow—and takes possession of a place which allows him land for his cow on the first of May. The main points to be considered are: The stabling or housing of the cow; the yard room she requires, and the storage or disposal of her manure. Then the least area of land that can be safely set apart for the support of the cow. How can that land be best managed with reference to that cow? The manner of cropping to obtain the greatest amount of food for the whole year. Shall any crops be sown for next year's use? It is to be assumed that the land is to be made to produce all that it will profitably yield, which will bring up the question of manure and fertilizers, of course considering that produced by the cow herself. What proportion of the produce of the land is to be cured for winter? Roots and keeping them. How much food must be bought, and what? The cow is to be so fed, to be so long milked, and in every respect so treated as to give the best returns of which she is capable to her owner. Time of calving. What to do if help is needed. Treatment after calving; what to do with the calf. Milking. The Essay need not treat of the disposal of or the uses of the milk.—We give these suggestions as to the kind of Essay desired, but the writer is by no means limited to these. The problem is—given a good cow, how to get the best possible returns from the least possible portion of the land through the agency of the cow. The Essays to be legibly written on one side of the paper only, and not to exceed 6,000 words (which is about two pages of the *American Agriculturist* in *this* type). Sketches for engravings may be sent if desired.

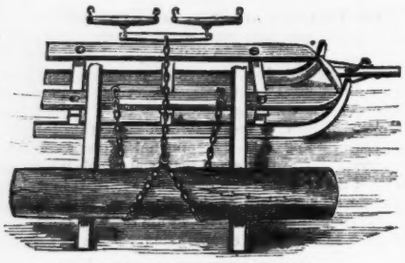
Cash Prizes.

For the Best Essay	$50 00
For the Second Best Essay	25 00
For the Third Best Essay	15 00

The Essays to be sent to the *Editors* of the *American Agriculturist* on or before April 1, 1880, in a sealed envelope with an assumed name, and an accompanying envelope containing the assumed name and the real name and address of the writer. The prizes will be awarded by a committee of competent and impartial Judges. All Essays submitted for these prizes to become the property of the *American Agriculturist.*

Market Tendencies.—Those who have watched the markets for the last ten, or even five, years, are impressed with the fact that there is now a much greater discrimination than formerly as to quality. This is true in all departments, fruits, vegetables, etc., but perhaps more marked among meats than elsewhere. Butchers as a class are getting to be very observant and particular, and this is certainly a movement in the right direction.

Loading Logs.—"L. M.," Canajoharie, N. Y., sends a sketch and description of a method of loading



LOADING LOGS UPON A SLED.

logs upon a sled, which he has found to be entirely satisfactory. The whole matter is so self evident from the engraving, that an explanation is not called for.

The Bank of a Creek in York Co., Pa., is margined by bushes 10 to 15 feet high; the owner, "A. L.," does not like the looks of it and desires to use the land; he wishes to know what he can put in place of the present growth that will prevent the stream from washing the banks, which are in some places nearly perpendicular and in others sloping....Were the place ours, we should try to modify the present growth rather than to replace it by another, which, as the land is now full of roots would be a most difficult matter. No doubt the thicket can be narrowed, by taking out some of the shrubs upon the land side; then if the remaining shrubs would be more pleasing if more formal, we would convert them into a broad hedge, by cutting them back to a line, making the present shrubs some two feet shorter than the hight is to be finally. Now is the best time to cut them, and by an annual clipping a dense and comparatively narrow hedge screen may be very readily formed.

Killing the Live-Forever.—There is probably no other weed more tenacious of life than Live-forever. Among the various suggestions for its destruction that we have published, is that of smothering it with refuse hay, to exclude light and air. Mr. J. Northop, writes from Vermont, that he tried to smother it, and though he put wild hay over it, to the depth of 6 feet, he thought the weed increased under the treatment. One of his neighbors tried to burn it out, using load after load of wood, with no good results. Another neighbor got rid of the plant, by pouring boiling brine upon it. Mr. N. suggests digging up the plants, and putting them in the road, where they will die very quickly. He also says, if the land be rolled with a heavy roller, while the Live-forever is wet, and the field be pastured at the same time, the plant will disappear. The trouble in digging it up is to get all the roots; every fragment left in the soil will grow.

Ice-cold Water should not be taken in large quantities by horses just after they have been driven and are warm. Let them rest a while and cool off.

Do Thoroughbreds Revert?—In order to obtain facts on this important question, W. H. Brewer, Professor of Agriculture in Yale Scientific School, issues a circular containing the following inquiries:—"1. Have you personally ever known any case where thoroughbred Shorthorn cattle, because of climate, poor feed, neglect, or any other cause, have become in character anything else than Shorthorns—in other words, where, from any cause, thoroughbred Shorthorns have degenerated into animals of any other breed or type?—2. Do you personally know of thoroughbred animals of any other breeds so changing or reverting?—3. Have you ever heard of such a thing taking place, in the experience of other breeders, so well authenticated that you believe it to be a fact?"—If fully responded to, the answers to will furnish material for a valuable report at the hands of Prof. Brewer.

In-and-in Breeding.—"A. R. L." This term has been variously defined as far as words go, but the idea is about the same with all, namely: A breeding together of animals that are closely related, such as cousins and those bound by ties of even closer kinship.

The Bee Moth.—This insect is very destructive to the honey bee, the larvæ or "worms," working their way through the combs, and in time, if not attended to, becoming so abundant, that the bees are obliged to abandon the hive. The only effective way to meet this enemy, is to be "first on the ground," and prevent the moths from entering the hives. The insects may be found resting about the hives in *early* morning, and being sluggish at that time can be easily caught and destroyed.

Where to Get This and That.—Many *thousands* of letters come to the Editors every year (some with and some without "return postage"), asking where they can obtain from trustworthy parties, implements, animals, poultry, seeds, plants, fertilizers, and a great variety of other things, all of which questions we try to answer when we can. But nine out of ten of these letters, and much valuable time of both writers and respondents, would be saved, if the inquirers would take the little trouble required to just look through the advertising columns, where usually, in one number or another, several parties announce the very things asked about. We try to keep out all parties not trustworthy—and do not admit any advertisers whom we would not ourselves patronize when wanting the things they offer. (The Editors have the "veto power" over any and every advertisement proposed for these columns.) It will always pay to read through the business columns to see what is offered and by whom, and useful hints are often derived from reading what others say and how they say it. New ideas are thus started up in one's mind.—When corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of *this* Journal. They will know what *we* expect, and what *you* expect of them as to prompt and fair treatment.

Heavy Pigs.—"Dr. C. E. B.," Stonington, Ct., sends an account of some pigs raised by him, crossed Berkshire and Chester Whites, which weighed when dressed 546, 532, and 437 lbs. respectively, being 14 months old; also two spring pigs 8 months old, which weighed 370 and 404 lbs. They were fed on milk and meal, and were sold at 6 cents a pound, which left no profit.

Sundry Humbugs.

The readers of this column are aware of the frequency with which we have referred to Wall Street speculations. For over a year there has been no one subject upon which we have had so many inquiries as those relating to the circulars sent out by parties in and near Wall Street. These circulars, in some cases a single sheet, and others a handsome pamphlet, showed very plainly that, were their figures true and did everything work as promised, a small investment would soon give a large return; and it was made so clear, that one with a few hundred dollars to start with could soon become a millionaire, that very many sent their money without hesitation to those issuing the tempting circulars; others more cautious wrote to us to inquire.

LETTERS CAME BY HUNDREDS,

all of the same purport; with scarcely an exception the writers wished to know the "responsibility" of the parties. So well were the schemes presented that no one seemed to doubt that it was all true, and each seemed to feel that if the parties could be trusted to use his money in "puts and calls," "special privileges," and all the rest, his fortune was sure. Our carefully made inquiries only discovered that the various parties kept large bank accounts and had abundant capital. Indeed, some of these parties brought us strong recommendations as to their responsibility and even respectability, and made us the tempting offer of many hundreds of dollars to insert their advertisements in the *American Agriculturist*. But we could not accept the lucrative offers, and thus become accessory to what seemed to us would be bad for any of our readers thus invited to invest. A singular feature in the matter all along has been that in all this correspondence there came *not a single complaint*. Though all seemed favorable, we all the while felt that there was a screw loose somewhere. According to the statements, investments of $5 and $10 were welcome; the Brokers would make these into $50 and $100, and gladly, for a small commission. Now if these brokers had abundant capital, why didn't they invest that, and get the *whole profit* for themselves, instead of asking for $5 and $10 from the farmers in Kansas, Minnesota, and everywhere else to use, when they had a plenty of their own?

A LITTLE COMMON SENSE

is a capital thing to apply in such cases. Common sense taught us that these circulars showed that money could be made altogether too easily. Common sense indicated that were there such easy and safe methods of making money, those who discovered them would not tell all the world and advertise for strangers to come in, but keep the secret for themselves and intimate friends. This view of the matter, and the general "ear-marks" that one can hardly describe, but which, whoever has had long to do with such schemes, "feels in his bones" rather than sees with his eyes, made us quite confident that there was something rotten about it. We had had not a single complaint, and their bank account was large, so we had no grounds upon which to base an exposure of the parties themselves. (It took months of careful, earnest investigation and trap-setting by sharp detectives to finally unearth their swindling.) But we could help our readers, and warn them against the persuasive circulars by an exposure of the business without reference to the parties engaged in it. Nearly every month, for a long time, we have endeavored to show how stock speculations of the kind proposed were regarded in business circles, and that the sound, reputable merchants, bankers, brokers, etc., all looked upon the "put and call" business as *the meanest form of gambling*. But the end has come, our suspicions, or presentiment of wrong doing, are more than fulfilled. All of these remarkable "Brokers," who occupied such stately offices, and sent out pictures of them, who had such special advantages, and who could invest the money for others so profitably, turn out to be

THE MEANEST KIND OF SWINDLERS,

and must take their place with those who "shove the queer;" those who sell $15 Bibles for a dollar; the man who is in search of his cousin—in fact, they step to their places in the ranks of the great army of cheats, frauds, and swindlers, who prey upon the honest and unsuspecting, dealing in bogus stuff of all kinds, from flash jewelry to bogus lottery tickets to which there is no lottery and every ticket bound to draw a prize. In fact, it is alleged that the great Pattee, who a few years ago was the head and front of the Wyoming and various kindred lottery schemes, was actually the capitalist of

TWO OF THESE BROKERS' SHOPS.

Four of the leading establishments in this "stock" business are said to have been practically under the management of one man, Buckwalter by name. These were Lawrence & Co., Adams, Brown & Co., Allen, Jordan & Co., and Barnes, Garrison & Co., Buckwalter owning the first two entirely, and half of the others. Much trouble was caused by these scamps taking

THE NAMES OF REPUTABLE BROKERS.

Thus the house of Lawrence Bros. & Co. stands high, and the name of Lawrence & Co. was sufficiently like it to be very annoying; so one of the largest houses in the city is A. Belmont & Co.; the name of another of the concerns, Thatcher, Belmont & Co., conveyed to those abroad the idea that they were *the* Belmont & Co. The annoyance caused by these establishments, and their operations bringing discredit upon those engaged in legitimate stock brokerage, induced the Law Committee of the Stock Exchange to employ a law firm to collect information as to these operators and to endeavor to put a stop to them. At the proper point the services of Mr. Anthony Comstock, Special Agent of the Post-Office Department, were called in, and as a result the disreputable firms were hit in their most vital point—

THEIR LETTERS WERE STOPPED!

The case being reported at Washington an order came from the Postmaster General to the Postmaster at New York forbidding the delivery of all letters directed to the firms named above, and to half a dozen more all in the same game. Of course stopping their letters ended their business, for these chaps operated entirely through the mails. Next to the stoppage of the delivery of their letters the most important step is the seizure of the lists of names of persons all over the country; books containing thousands and thousands of names were seized, and these are the most important of all the assets of these concerns—the chief stock in trade. It is gratifying to know that this wicked business has come to an end, at least for the present. Perhaps those who made remittances to these firms would like to know

HOW THEIR MONEY WAS USED,

whether on "special privilege" or "put and call." They used the money very judiciously—one of the chaps "put" it in his pocket and it wasn't possible to "call" it out again. Stocks? they had nothing to do with them. They knew a trick worth two of that; besides, stock speculations are risky and some think immoral. It was a very neat business—all profit. Mr. Buckwalter's *monthly* income from the four concerns named above was to be over $22,000.—It must be a highly consoling reflection to those who have contributed their $10 or $20 to make up this amount, to read that he "is said to be handsome in appearance and singularly winning in manner."—"Winning!"—we should say so. How he *did* win!

When these schemes for making money so readily, are presented, no matter how persuasively to those living at a distance, when the figures show with convincing cer-

tainty that an investment will pay 20 to 50 per cent, it is well for those who feel tempted to remember that

NEW YORK CAPITALISTS ARE NOT ASLEEP.

They have millions awaiting investment in anything that will be reasonably safe and give a fair return. Any thing so sure as these stock schemes were *represented* to be, if it would pay 10 per cent, would be jumped at. It is very certain that no really safe, profitable business would be hawked all over the country seeking investment in small driblets. Every good and safe chance, every chance to invest money that we could commend to our friends, is wanted in New York. The very fact of its going abroad is evidence that it is not of a kind wanted here. We have given considerable space to this

BOGUS STOCK SCHEME,

as it is the most important, so far as the amounts concerned go, of anything yet attempted, and the most pernicious. It could never have been checked but for the law that prevents the use of the mails for fraudulent purposes. There will be an attempt, possibly at the present Congress, to either repeal the law, or so amend it as to destroy its efficacy. The law stands in the way of those who have a vast money interest in its repeal. It is to the direct interest of no one to lobby in its favor. The *American Agriculturist* goes into politics so far as to advise its readers to let the law-makers know that this is a most beneficient law, and one that must stand. ....Now that the planting season is near at hand

THE VENDER OF WONDERFUL PLANTS

will be around. He has already been in Norfolk, Va., with the Blue Moss Rose, for which he only asks $5. If he will bring a real Blue Rose, mossy or not, he can readily get $500, if not more. There is the firm our correspondent asks about in Geneva, but they never authorized such a fraud as this pretended agent is. Do not buy any unusual things: Strawberries that grow on bushes, Self-pruning Grape-vines, the Peach budded on the French Willow, or any other of the marvels of horticulture... Among the old things that have revived of late is

THE SELLING OF RECIPES.

If persons who bought these recipes merely lost the money paid for them, it would not much matter, but the evil does not end here. One of the most common recipes is that for some kind of illuminating oil; sometimes it is "Solar," or "Centennial," or "French," or other high sounding name, but all are equally dangerous, as, so far as we have seen them, they have for their basis

THAT MOST DANGEROUS LIQUID, BENZINE.

There are several things added, but they do not in any manner change its character, nor is it possible to change it by the addition of anything. In view of the fact that these recipes are now sold, we must repeat our warning against them. If any one has paid a dollar or any other sum for a recipe making an illuminating oil with Benzine, do not be tempted to use it. Benzine is very volatile, and its vapor mixed with air will explode. Those who sell the recipes claim that the oil will not explode.—Of course not, *Oil* never does explode, but the vapor when mixed with air will—dangerously—fatally. It is very amusing to read the high sounding threats on these recipes, that the holder is "not to divulge or make known any of the ingredients."—"Under Penalty of the Law." Bosh!....The "Dictionary" scheme is quiet, but

"THE NEW DOMESTIC BIBLE"

offer, noticed last month appears to have had quite a run, as some papers of generally good reputation have published the advertisement. It is strange that one can read the advertisement and not see the catch. It gives a cut of a fine large Bible, and it also describes one worth $15, and then states: "In order to introduce our Bibles, we agree, upon the receipt of 75 cents, to pay the postage and other expenses, to send any reader of this paper a copy of the Holy Bible."—Mind, he don't agree to send *that* Bible. "*A* copy of the Holy Bible" is pretty good for Philadelphia; she will soon equal New York, or even Cincinnati, in the Humbug business if she keeps on.... A School of Design is a good thing in any city, but

"A NATIONAL SCHOOL OF DESIGN"

is the kind they have in Chicago. They advertise to send an "original oil painting," worth $10 or $15, for 25 cents. One of our friends seeing the advertisement thought to please his picture-loving wife. He received the painting, and sends us half of it, the other half went to the paper in which he saw the advertisement. "Original!" we haven't the least doubt of it. We don't think that any one—not even those who decorate the panels of street cars and omnibuses, could be any more original—it is the *originalest* painting we ever saw. This "School of Design" designs lots for 25 cts. in the sign painter style. Our friend should not complain; we don't think he could get such a picture anywhere else for half the money.... It is so long since we have had a good, "bang up," real A No. 1 cure-all, that it is rather refreshing to get hold of

SOMETHING NEW IN THE MEDICAL LINE.

Here it is, a rather neat pamphlet, all bright and fresh from the press. It is headed: "Truth is Mighty, and Will Prevail."—If our memory serves us, we have heard something like this before. Then here is a picture; an old man on a bed, a young man, a bureau.—The room looks familiar. We must have seen that before. Then the story—these medicines always have a story. It is at one time a visit to "Old Mother Noble" (what has become of her and *his* diamonds?). Again it is Eddie Eastman among the Indians, and Eddie's wife too among some more Indians.—Eddie, "we have missed you."—All these stories come before us with touching freshness. But this story; Bedside of aged father—eve of departure to "that bourne"—universal remedy—about to be revealed—all except myself to retire—old-fashioned bureau—instructed me to touch secret spring—recipes for the manufacture and preparation of his valuable remedy."—Pshaw!—its just that same old, old story that's done service over and over again, and is again revived, and now does service for

"THE SYSTEM RENOVATOR, & BLOOD PURIFYING SYRUP."

Of course it cures everything. You have only to "purify the blood," and "renovate the system," and there you are. "Liver complaint?" read the symptoms—every one has them—"Consumption?"—read the symptoms—so many, you must have some—Remedy—Take the aforesaid—and so on through the whole catalogue. It is melancholy to think that people will read this stuff and believe it—and what is worse, take the medicine.

Starting a Fire is a familiar daily exercise for thousands of thousands throughout the United States at this time; but there are many who do not know the best way. *Concentration* is the leading feature in this little, but very important domestic duty. 1st, the fuel should be *concentrated*, that is, put together in a compact heap; and 2d, in a place on the grating where the draft can be *concentrated* upon it. These two points gained it is an easy matter to produce a brisk fire. When the kindling, which we have presupposed was dry and in sufficient quantity, is well started, the wood or coal, as the case may be, is so put on that the draft and flame will pass directly through the fuel. In starting a fire, all depends upon having the conditions right, and great loss of time, and even patience, is incurred if they are not provided.

To Dress Skins With or Without the Fur On.—"C. L. B.," Saratoga Co., N. Y. Tanning is done by means of bark or other substances, which contain tannic acid; this combines chemically with the gelatine of the skin, and forms what we know as leather. But the dressing of skins with some astringent salts—as Alum, for instance—is called *tawing*, and not tanning, as no tannic acid is used. The hair is removed from skins by some alkaline matter, as lime or wood ashes, and with small skins this may be used as a paste spread upon the flesh side and left for a few days, when the hair may be rubbed off with ease. The alkali destroys the "roots" of the hair (the bulbs in the hair follicles), and so loosens it from the skin. The skins may be *tawed* by spreading a mixture of equal parts of finely powdered Alum and Salt upon the moist flesh side, doubling each one, or laying pairs with the flesh sides together and putting them away for several days. After the skin has taken the character of leather, it is to be stretched, scraped, rubbed with chalk and pumice stone until smooth and pulled and stretched while drying to make it soft.

Eggs from Different Breeds of Hens.—A western egg-raiser, from his own and others' experience, formulates the following table of weight and number of eggs produced by different breeds of fowls:

Kind of Breed.	*No. of Eggs per pound.*	*No. of Eggs per year.*
Leghorn	9	160
Hamburgs	9	150
Light Brahmas & Black Spanish	8	130
Polish	9	125
Black and White Cochins	8	125
Dark Brahmas	8	120
Plymouth Rocks	8	115
Bantams	16	90

Cross Breeding of Sheep.—"B. Bro." Merinos are greatly improved as mutton sheep by crossing with Cotswolds or Leicesters; the former cross makes a large heavy-bodied sheep, with a valuable, medium, long combing wool; the latter cross is not so favorable, but is a good mutton sheep. The information given on cross breeds in "The Shepherd's Manual" contains all that has as yet been learned or done in this way. Cross breeding must be done from year to year, and it is not a permanent operation, for after two or three crosses the produce is not to be distinguished from the pure breed used for the male animal.

Census Assignments.—Prof. C. S. Sargent, of Harvard University, has charge of the department of Forestry, and Prof. W. H. Brewer, of Yale College, is employed as expert on Cereals. The Cotton is placed in charge of Prof. Hilgard, of the University of California, and special work in the agricultural department, has been assigned to Hon. J. R. Dodge. Such names as these, are an assurance of thoroughness in this important work.

A Wooden Mailing Money Box.—Since fractional currency has gone out of use, remittances by

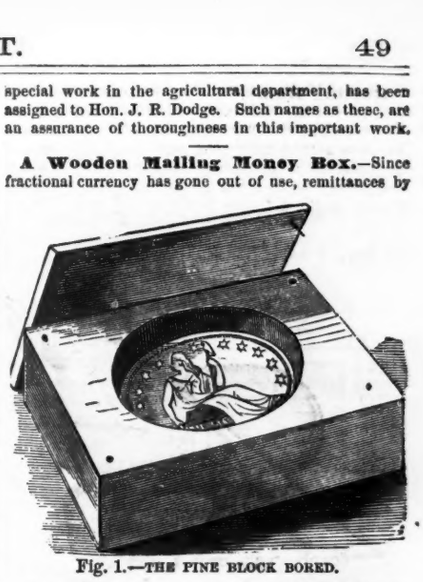


Fig. 1.—THE PINE BLOCK BORED.

mail, of sums less than a dollar, must be made in coin. The sending of coin by letter is both inconvenient and unsafe. A heavy coin is easily detected, and can be abstracted by a dishonest person, or it may wear its way through the envelope of its own weight. A correspondent recently having occasion to send us some silver "change," inclosed it in a wooden box, which he made as follows: A pine block, a trifle larger than shown in figure 1, was bored nearly through in the center, with 1¼-inch auger bit, the "worm" passing entirely through, and thus furnishing a small opening to allow the postmaster to inspect the contents. A cover of thin pine, fastened by four tacks completes the box, as shown in the engravings. The whole can be made in five minutes. When filled, wrapping paper suitable for the directions is *tied* around it with a string. The post-office regulations require 2nd and 3d class matter to be tied. A box of cigars *nailed* is subject to letter postage, and so of other boxes nailed together, if the contents are not visible. We have illustrated the box as it shows ready resources in an

Fig. 2.—THE BOX READY FOR MAILING.

emergency. Our correspondent did not postpone or give up sending the amount of his subscription, because he had only coin. Coin would not be safe in a letter, he had no suitable box, so he at once made one. We have received insects sent by mail, put up in wooden boxes in a similar manner, though in these cases the bore was smaller, and made in the direction of the grain of the wood.

Sowing Clover Seed.—Just after a light snow is a favorite time with many in which to sow clover seed—as the seed can be distributed very evenly, and it falls into a good moist place as the snow melts. If Red Clover is sowed alone, about 20 pounds per acre should be used.

The Agricultural College of Japan.—This Institution has been in existence for three years, and a large number of students have been educated in it. The government appreciates its work and its needs by engaging foreign teachers and aiding it in other ways.

Sharpening the Horse-Shoes.—At this season which abounds in ice, the horses' shoes demand attention that they do not become smooth and thereby subject the animals to cruel strains that may develop into wind-galls, ring-bones, etc. The horse's instinct teaches him he is unsafe with smooth shod feet when driven upon icy roads, and he is constantly in fear, and trembling, lest he slip and fall. It is costly and cruel to drive horses thus shod. The calks should be of hard steel and kept of even length that the weight of the body may be distributed evenly over the muscles of the limbs. If one has not "Self-Sharpening Shoes" it will pay to make frequent calls at the blacksmith's shop so long as the ice lasts. Give the horses a safe footing.

Butting Rams.—The butting of an ugly ram, and especially of one just starting out in the business, is not to be winked at. Too many valuable and otherwise harmless animals have been made intolerably ugly by boys, and sometimes older persons, teasing them in butting while they were young. To cure a ram that is continually on the defensive is not an easy task. The following has been suggested as a remedy, founded upon the fact that when a ram butts, he steps back a few feet to prepare for his work. Two long poles are attached to

REMEDY FOR BUTTING RAM.

the horns, one on each side, to drag on the ground, as shown in the engraving, the backing up of the ram will be so interfered with by the poles, and it will upset him so much that his butting intentions will be modified or diverted. In a short time one stick will be sufficient, and after a while the cure will be effected. This treatment will be employed only when the ram is specially valuable; else he had better be fattened and pass into mutton.

Apple Trees in Kansas.—R. Stauffer, Nemaha Co., writes that the warm weather last autumn caused the young apple trees to bloom and push their leaves; also that some trees have the bark killed upon one side of the trunks. It would be for the future good of the trees that have bloomed to cut back the shoots to strong buds that have not started. The injury to the bark is due, as he suggests, to the sun in winter, and may be prevented by shading the trunks; this may be done by loosely winding a hay or straw band around them, or by binding a few corn-stalks upon the sunny side. Another method is to tack two light boards together like an eaves trough, and secure this against the trunk during winter and spring.

The Ohio State Horticultural is one of the societies that always have interesting annual meetings and the accounts of the one held at Canton, Stark Co., in December last, show that in spite of rain and mud, there was this year the usual good time. The election resulted in the reappointment of the former corps of very excellent officers, among whom are Doct. John A. Warder, North Bend, of Pres't.; Geo. W. Campbell, Delaware, Treasurer; and M. B. Bateham, Painesville, Secretary.

Lanterns in the Barn.—Caution is always necessary when kerosene is burned, but never more so than when used in the barns and stables. A candle well secured within a frame of glass for use in the barn, is cheap, handy, and, above all, comparatively safe, even if it should fall from its support. Do not use any lantern in the barns and stables if it can be possibly avoided.

Mending Harness.—When a harness breaks it always is just at that time and place when the break is of the greatest inconvenience. There are two ways of meeting this matter. 1st, by keeping the harness in good repairs, that no weak spot may exist when the trying time comes; and second, to be prepared for a break, should it come, by carrying a coil of strong copper wire either in the pocket or in some place in the vehicle, and a knife for doing the necessary cutting and punching of holes. A good teamster should be an expert in meeting all "break downs," by being able to overcome them.

Doing Chores.—Much time is lost by farmers in doing the chores. This loss may arise from several causes; often in the arrangement of the farm buildings, and that of the stock; "things" are not handy. The hay that is fed to the sheep is sometimes on the other side of the barn, and must be carried a long distance by the forkful. This is but an illustration of what may be the case with the corn, litter, and especially the water. Even if the arrangements are perfect, there must be a method in doing the chores: a *time* as well as *place*.

"Pine Straw," which is not properly straw, but the dry, fine, needle-shaped leaves of the pine trees, makes only a fair absorbent for liquid manure, as it is so resinous and woody. For the same reason these leaves are not easily decomposed and can not rank high as an element in a compost. When any other kind of leaves, straw, leaf mould, or muck, can be obtained, but little time should be spent in gathering pine straw. If they are at hand in abundance, it will pay to use them. Their best use is as fuel, though they burn too rapidly. A few years ago some one proposed, by means of a powerful press, to make them into blocks to be used as fuel. Whether this was tested or not we have not learned.

Food and Digestion.—The value of a food does not depend entirely upon the amount of nourishing ingredients it contains, and a chemical analysis, while it may, does not of necessity show the exact feeding value of fodder, roots, etc. It may be that in the influence that the food has over the digestion its greatest value lies—stimulating it to healthy and vigorous action, etc. Thus turnips are a poor feed in themselves, worth only $2.80 per ton as far as the food elements go; but they are worth much more, as a matter of practical experience, in the relish they give the stock for dryer and more substantial food. Another reason may be found in the fact that in much food—especially the different kinds of fodder—the nutritive portions are in the cell of the plant—shut up as it were in little wooden cases. The chemist who takes all needed time for an analysis, can work at the fodder until he gets out all the nutritive matters there are in it, and use various methods of doing it. On the other hand, in the laboratory of the animal's stomach the fodder can remain but a limited time, and only the same process is used for all kinds of food, hence the animal may not be, and generally is not, able to remove all the valuable ingredients that the chemist has shown it to contain.

Curry the Cows.—No animal of the farm will show signs of neglect so soon as a cow. The coat gets rough and dirty, and the bones stand out with irregular and peculiar prominence. On the other hand, as a matter of course, good care gives the opposite appearance, and the creature is neat, clean, and plump. There is much in a good supply of wholesome food, but it, without occasional rubbing and currying, will not make the cow look and feel comfortable. It pays to curry the cows.

(*Basket Items continued on page 75.*)

Bee Notes for February.

BY L. C. ROOT, MOHAWK, N. Y.

During this month bees require but little care; while they should be left as nearly quiet as possible, the bee-keeper in the meantime may be actively engaged. In travelling through the country, I observe that not one bee-keeper in ten has taken enough interest in the business to advance beyond the use of the old-fashioned box-hive. This fact is almost beyond comprehension, when we compare this manner of keeping bees with the better methods of the present day. It would be difficult to innumerate in a single article the merits of a movable comb-hive with each comb built in a separate frame, as compared with the old box-hive with crooked immovable combs, the condition of which can be but very imperfectly ascertained. With such movable frames, the bee-keeper may avail himself of the advantage to be gained by using artificial comb-foundation, thereby securing straight worker combs. When desired, such combs may be lifted from the hive and their exact conditions ascertained. The bees may also be brushed from them, and by the use of the Honey Extractor the honey may be removed and the combs returned to the hive to be refilled. The power we obtain by the use of these frames to control swarming, is enough to command the attention of every bee-keeper. Many have said to me that if it were not for the trouble bees would give them during the swarming season, they would keep a few swarms. A minister of my acquaintance disposed of his bees from the fact, as he said, that they were sure to swarm on Sunday. All such annoyances may be avoided if the movable comb-hive is used understandingly. Do not make the mistake which so many have made, in thinking that simply securing a movable comb-hive, and placing a swarm of bees in it, will result in any marked advance over the old way. We should understand these advantages before attempting to profit by them. The facility with which the timid are enabled to perform the necessary operations in advanced bee-culture is likewise a great improvement upon the practices of earlier days. Close-fitting rubber gloves, a modern bee veil and the Bellows Bee Smoker, will enable the most timid to handle bees with perfect safety. The particular object of these remarks is to induce the beginner in bee-keeping to spend these winter months, when not crowded by the busy season's operations, in investigating these improved methods of our pursuit. After deciding upon the course to be followed, all needful preparations should be made before the busy season opens, in order that no time need be lost when the harvest once fairly begins.

Cutting Fodder and Litter.

With a fodder-cutter of the right kind, it may even pay well to cut the litter used for bedding

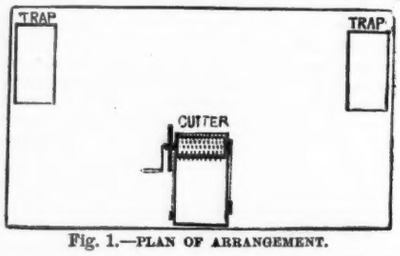


Fig. 1.—PLAN OF ARRANGEMENT.

cattle. This has been tried by the writer with advantage by means of a simple arrangement. A machine which will cut straw or coarse hay in longer lengths than is usual for fodder, is preferable to any other; cutters are now made that can be changed so as to alter the cut from half an inch to an inch and a half by the mere moving of a cam. This may be used for cutting feed or litter. A "Common-Sense Fodder-Cutter" was procured and fixed in the middle of the second floor in the cow-barn. A trap-door on each side in the floor made it easy to drop the cut straw on one side to the standing stage below, where the cows were tied up; and also to drop the cut hay or fodder into the feed-box on the feeding floor, without moving the machine. A plan of the arrangement is shown at figure 1. With the cutter referred to, a whole sheaf of straw may be cut at once into chaff 1¼ in. long for litter, and if straw is used for feed, the cut could be changed to ¾ or 1 inch instantly, the knife passing through 4 inches of straw or hay with the greatest ease. Either hand or power may be used, and a wind-mill attached to the end of the barn would furnish a very cheap and effective power for the purpose. One peculiarity of the cutter mentioned, in addition to its automatic and instantaneous change of cut, is that it has a direct cutting action, and a draw motion is given to the knife by its peculiar scythe-blade shape. At figure 2 we give an engraving of this particular machine. There are many other good fodder-cutters, some of which have been described and illustrated in these columns from time to time. Considering the large number, and the excellence and profitableness of these machines, it is very clear that farmers should avail themselves of their use, to cut fodder, and in many cases to cut even their litter.

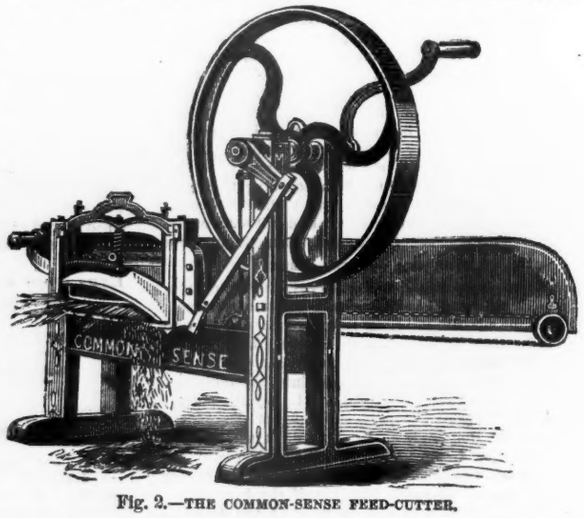


Fig. 2.—THE COMMON-SENSE FEED-CUTTER.

Fencing and Fences.

What We are Aiming At.

Many letters of inquiry will be answered, by simply stating the object and aim of these chapters on fencing: As previously noted, the cost of fencing is enormous. Half the fencing in the country is needless and *should* be abolished, and will be when the best system of farming is adopted, and proper laws in regard to animals as "free commoners" are enacted and enforced. That time has not arrived. "Soiling" cattle will come gradually into practice in the older settled States, but a large amount of fencing will be necessary wherever domestic animals are kept at all. Almost half of our country is devoid of wooden fencing materials, and in most of the rest, timber is disappearing and increasing in cost. Wood fences,—except those of chestnut, locust, red cedar, and a limited number of other woods, none of them abundant—decay rapidly, and need constant repairing and renewing.

Now we have every reason to believe that Iron and Steel can be utilized in the construction of fences that will be better, cheaper, and ten times more lasting than ordinary wooden structures. The supply of iron (and steel made from iron) is inexhaustible, and cheaper modes of production are rapidly developing. The aim of these chapters is to not only gather and disseminate what is already known as to iron and steel fencing, but also to *stimulate invention* in that line. A large number of letters from men of inventive minds, with sundry suggestions and questions, show that a good effect has already been produced. The wide-spread interest in this subject is manifest in the fact that tens of thousands of extra copies of our past two numbers have been called for.

Metal Fences vs. Prairie Fires.

There is one important point, not previously referred to, in favor of *metal* fences, posts included, for the new prairie pasture lands, where the annual burning of the grass takes place. Such fences will not be consumed, though if not standing on a strip of plowed land, they may be warped and slightly injured. As is well known, a great amount of fencing is annually destroyed by these prairie fires. This consideration alone is a strong point in their favor. As plain wire is practically useless, the barbed wire, with all its objectionable features, will be used, until a better metal fence is supplied.

Relative Cost of Iron and Wood Fence.

Many letters ask us to give the present difference in the cost of wood and iron or steel fences. We have not yet gathered all the data which we shall be able to give, but some approximate figures may be presented. For a comparison take the common post-and-board fence, and the Improved Brinkerhoff Steel Strap (No. 19), or any of the forms of Barbed Wire given last month on page 11. The price of these in quantity may be estimated at 11 cents per pound, 1 pound to the rod. The cost of boards 16½ feet long and 6 inches wide we will put at 12 cents each, that is, $15 per 1,000 feet board measure, which is below the actual cost at points distant from the lumber regions. Suppose also that it is practicable to set the posts 8½ feet apart from their centers. The steel strap or wire fences require only one post to the rod. The cost of the posts we will reckon at only 12½ cents each, which is below the average. We then have

FOR 100 RODS OF FENCE.

Post and Board.—4 High.		*Boards.*	*Galvanized Steel Fence.—4 Strands High.*	
400 boards at 12c	$48.00		400 rods at 11c	$44.00
200 posts at 12½c	25.00		100 posts at 12½c	12.50
80 lbs. nails at 4c	2.00		400 staples	75
Labor about (?)	25.00		Labor about (?)	10.00
Total	$90.00		Total	$67.25

The cost of labor will depend upon whether the posts are driven, or set in holes dug by spade, or by post augers. The cost will be only half as much for the Steel Fence, as only half as many posts are used. The cost of erecting the board fence will be several times greater than putting up the metal straps or wire. It is a very safe calculation to say that post and board fence will cost nearly 50 per cent more than the metal fence; that if 100 rods of the post and boards can be put up for $100, the metal fence will not cost over $70. No allowance is made for saturating the boards with any material to give them a fair durability. Once put up, the metal fence will outlast half a dozen wooden fences, except the posts, which will have the same durability in either case.

Is There Any Doubt Then

that metal fences are to be preferred on account of cost, durability, and frequent repairs? The *comparative effectiveness* of the two is the chief question to be decided; and if this be settled in favor of the metal fences, the only question will be, which is the best kind of metal fence.

Iron Fence Posts.

A serviceable, effective, *cheap*, easily erected Iron Post, for general use in ordinary farm and prairie fencing, is now of great importance, and we give here a few more of the forms presented, not so much for their practical value in all cases, but as suggestive in calling out or producing *new* devices and

Fig. 14.

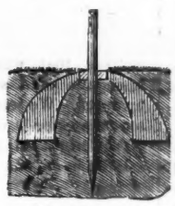


Fig. 15.

inventions. Some other forms have been contributed, but they have not yet been perfected, or proper sketches of them have not yet been prepared.

Fig. 14 represents one of several contrivances devised by the writer for supporting small or large iron bars used as fence posts. In this form three flanges, or wings, are cast in one solid piece, with a hole in the center of the top, through which the iron rod is inserted. The wings are thin iron plates running out to sharp edges at the wide bottom ends, so that they can be readily driven into the ground, and the post bar driven through, as shown in section in Fig. 15. There may be three or four of these wings; if set in the right direction probably three would suffice to resist the post's swaying to either side, and also resist the ordinary strain in the direction of the length of the fence. The hole may be of any form and size desired, for a round bar of any size, or a flat bar, or it may be large enough to receive a small wooden post. So also the wings may be of any size, length width or thickness required by the character of the soil, the distance apart of the posts and the consequent strain upon each. They may be curved or triangular, or of any form desired. The hole may be a short tube with the wings extending out from its sides. The center part around the hole may be of any thickness and strength required. For ordinary posts in firm soil, the wings one-eighth inch thick, 8 to 12 inches long, and 4 to 6 inches wide at the bottom ends would probably suffice, or even less than these dimensions, reducing the weight to 4 or 5 lbs. and the cost to 12 or 15 cents, or less even; while for soft, yielding soil, and for an extra strong fence, the dimensions may be much increased, without corresponding increase in weight. As the upper edges of the wings curve downward after leaving the post, they are mainly out of the way of cultivating close up to the fence.

A wooden fence post for soft, wet ground has been devised for his own use by Mr. John Bartlett,

Fig. 16.

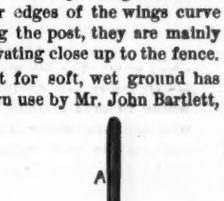


Fig. 17.

of Oshawa, Ont., as shown in figure 16. It is constructed of durable cedar; the base 3 to 4 feet long and of 4×4-inch stuff, or of any desired size and strength, is set as far into the soil as may be necessary, and the upright post is dovetailed into it, as illustrated. He saturates the bed-piece, and especially the joint, with a *hot* mixture of gas tar and pitch, both to preserve the timber and to set the joint more firmly.—Mr. Bartlett sends the sketch, figure 17, for using an iron bar as a post on ground too soft for supporting it alone. The upright, *A*, is ¾ or 1 inch round iron, bent as shown, the end *E*, entering an auger hole, and a strong staple, *D*, is driven over the angle. The bed-piece, *B*, is 3 to 4 feet long, of any width and thickness required by the soil, saturated with pitch as above, and set at any desired depth in the soil.—Mr. Bartlett also sends us (fig. 18) another device of his own for soft or other soils, which, though differing in form, is similar in principle to several other posts. This is a cast iron collar, of the form shown, of any size, and set at any depth required by the texture of the soil. If necessary, iron rod braces may be added on two or on the four sides.

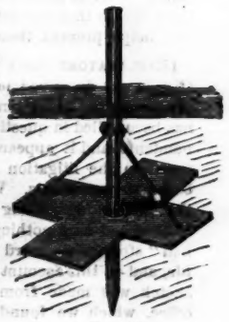


Fig. 18.

James C. Carpenter has devised a form of Fence Post, shown in figures 20 and 21. The ground piece of cast iron, shown by figure 20, is 11 inches long and 5 inches across the top, with flanges on each edge and two loops for inserting an iron rod. This is driven into the ground, as shown in figure 21, and the iron post rod driven through it. The upright is a bar of round iron, ¾ to 1 inch in diameter. Notches filed in or struck in with a "cold chisel" are made at the desired hights for the horizontal wires, and the latter are bound against the notches

Fig. 19.

Fig. 20.

Fig. 21.

with short bits of wire, the ends twisted together with heavy pinchers. (The middle wire is left unbound to show the notch.) Weight of foot piece (fig. 20), 4½ lbs.; of ¾-inch diameter round bar, 1⁵/₁₆lb. per foot, say 9½ lbs. for 2 feet in the ground and 4½ feet above ground. Figure 19, a device for driving the iron post bars, is a hollow tube (a large gas pipe) to slide loosely over the post, with a hammer weight upon the top.

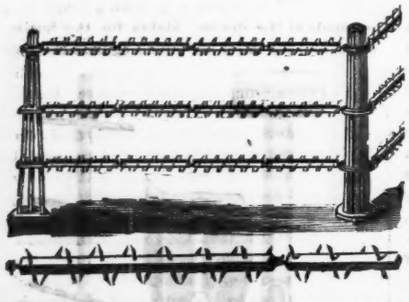
About Barbed Fences.

When beginning this discussion anew, three months ago, we confess to having been almost ready to condemn nearly all, if not all the barbed fences in general use, from the fact that we knew of many instances of severe injury to valuable animals, and from the strong opinions against their use expressed to us by intelligent men of good judgment, some of them having had opportunity for extended observation. Our objections have been somewhat modified by recent letters from our readers. Some write in effect, "our animals were more or less injured at first, and almost every steer gives them one trial, but hardly ever a second one; they remember the pain, and they keep at a safe distance thereafter."

An Important Suggestion comes to us from a subscriber in Western Kansas (his address we have mislaid for the moment), who has had considerable experience with barbed fences—a suggestion that may count somewhat towards obviating the strongest objection to barbed fences. He raises a line of low embankment along under the fence wires by turning in furrows from either side. The ridge thus formed, together with the furrow left on each side of it, arrest the attention and progress of animals before they actually reach the barbed wires, and helps prevent their being injured seriously.

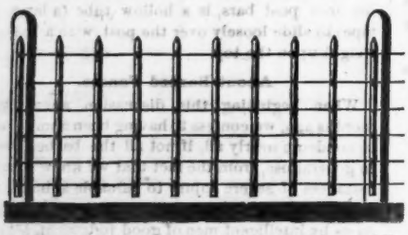
[EXPLANATORY NOTE.—The "Horse-nail Barb" (No. 1) was described in our last two articles, as practically the first attempt at barb-fencing. This has been called in question very strongly by correspondents, and it appears to be a point of some interest in the litigation among several owners of barbed-fence patents. We desire, therefore, to say that we know nothing as to the history of the matter, and care nothing. We gave the "horse-nail" story as we heard it, as it seemed very plausible, and on this account we supposed it true. Our sketch was made from a specimen now in our office, which we found in our search after samples.—The *history* of barbed-fencing may be of decided importance to patentees, and we have seen scores of pages on the subject, in print and in manuscript. What we are after in these talks is to get at the best present forms of iron or steel fence, taking into account *effectiveness*, *safety*, *economy*, and *durability*, with a little care also for good looks; and not only to gather and present to our readers all the information we can, but also to stimulate further improvements in this direction.]

No. 27. "Flexible Wooden Barbed Fence."—This is made of wooden strips, about an inch square and 4 feet long, with hooked attachments on each



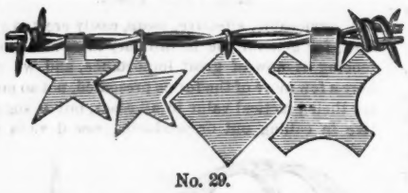
end, and pieces of wire put through at any desired distances apart to serve as barbs. After completion, the wooden strips are soaked in hot coal-tar or hot paint of any desired color, and transported in bundles. Among other points, it is claimed that it is flexible, is seen by the animals, and is little affected by heat and cold. We have not seen it in use, and can not judge as to its strength, and do not know its cost. Properly saturated it would be durable, but not be proof against prairie fires.

No. 28. "Betts' Ready-Made Wire Fencing."—This consists of six No. 10 wires firmly stapled to upright pickets, 15 to 30 in a rod. The pickets are, say 1x1¼ inch and from 2½ to 5 feet long, as desired. They may be of uniform length, or alternate long



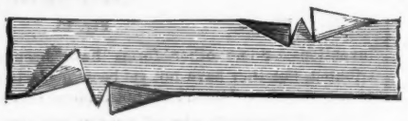
and short ones. A very ingenious machine rapidly applies the pickets to the continuous wires, distributes and drives home the staples, and winds the whole in a roll, the rolls usually containing about 6 rods each for transportation. It is fastened to the posts with staples over the wires. Among the claims for it are: that cattle can not get their heads between the wires; that the wires mutually support each other and fewer posts are needed; that animals can see it and will not run against it; that it is portable, and can be moved by drawing the staples and rolling it together; that it is ornamental, etc., etc. The cost varies from 90 cents per rod for undressed pickets, 15 to rod (weight 20 lbs. per rod), to $1.60 per rod for 30 long and short, dressed and pointed pickets to the rod, having a weight of 32 lbs. per rod. Albert C. Betts, Patentee.

At least half a dozen of our readers have sent us samples of various forms of wooden, and especially of tin "tags," to be attached to both plain and barbed fence wire as signals which may be seen by



No. 29.

animals that would otherwise run against and break the plain wires, or be injuriously wounded by barbs. We select the first sample at hand (the sender's name is not given with it). The tags are bits of bright tin of any form, cut from waste scraps and hung on one or two feet apart, more or less.



No. 30.—Mr. John Bartlett, of Ontario, referring to the barbed-steel strap, No. 2., sends us No. 30, which he suggests would save the waste of cutting out, and perhaps be effective. Two cuttings are made in the side of the strap, leaving a cone-section barb in the center, and the two corners are turned out as horizontal barbs, one on either side. One objection is that the strap is materially weakened at the barbed points by so much as it is cut into.

No. 31.—"Cable" Fencing Wire.—This consists of five No. 14 galvanized wires twisted together as shown in the engraving, which gives a side view, and an end section of the exact size of the sample. It is sufficiently strong to resist breakage by any domestic animals, and will answer well where barbs are objectionable, and the first cost of less account than strength and permanence. It will make a neat village fence. The present cost is 4 cts. per

yard, or 22 cts. per rod for each cable. Manufactured by Philip S. Justice, as per advertisement.

How far and where it may be expedient to use the leading varieties of barbed fencing is still an open question for examination and discussion Also, which of the various kinds are the best for general use, when any may be used. One thing is pretty well settled, viz.: that none of the long sharp-pointed barbs, having perpendicular sides, or those nearly so, and none of those inclined in any direction to act partially as hooks, are adapted for use along highways or where clothing will be likely to come in contact with them. None of the above barbs are adapted to small inclosures, or where *valuable* animals are in danger of contact with the long, sharp points of any form. Though they may be so shortened as to remove danger of fatal injury, disfiguring sores and scars will be produced. Something in the form of the "Brinkerhoff Improved," with sides so inclined as to prevent catching and tearing, and so short as not to produce deep incisions when struck squarely, will need to be provided. We understand that the kind referred to is not yet in the market. Whether it is or not, the field is open to inventors and manufacturers, and the public want must be and will be soon met. Hundreds of thousands of land owners, both of farms and village plots—all over the country, and especially at the West and Southwest—are desirous of changing from wooden to cheaper, more durable metal fencing, and iron posts are included in the demand—those good enough, simple enough, and cheap enough for general farm fences.

Two Years' Business—1878...1879.

The following approximate figures are exceedingly interesting, as showing not only the aggregates of several varieties of products, but also the great increase in 1879 over the previous year—1878 itself being in most things a considerable advance over the previous four or five years of depression.

	1878.	1879.	Increase.
Wheat crop *bush.*	420,000,000	488,700,000	68,700,000
Corn crop, *value.*	$450,000,000	$600,000,000	$150,000,000
Hay crop, *value*	$285,500,000	$325,000,000	$60,000,000
Oat crop, *bush.*	418,000,000	364,000,000	*d* 49,000,000
Potato crop, *bush.*	124,000,000	181,400,000	57,400,000
Butter, rec. at N.Y. after Jan. 1, *pkgs.*	944,100 (?)	1,025,400	81,300
Cotton rec., *bales.*	4,566,200	4,894,700	328,500
Coal produced. Anthracite, *tons.*	18,600,000	27,800,000	9,200,000
Gold mined	$37,576,000	$31,470,000	*d* $6,106,000
Silver mined	$37,248,000	$37,032,000	*d* $216,000
Tot'l Gold & Silver	$74,824,000	$68,502,000	*d* $6,322,000
Petroleum exported, *galls.*	329,100,000	402,800,000	73,700,000
20 Railroads, *gross earnings*	$88,987,000	$96,557,000	$7,620,000
Clearing House Exchanges	$28,827,000,000	$38,912,000,000	$10,585,000,000

The first four items are estimated, but they are doubtless not far out of the way, the figures in the table being drawn from what is considered good authority, the "N. Y. Commercial Bulletin." The above figures show that during 1879 the business done through the Clearing Houses in a few of the leading cities alone, amounted to nearly *thirty-Nine Thousand Million Dollars*—an increase over 1878 of more than Ten Thousand Million Dollars.

More Pleasant Figures.

We have before us two full years' reports for the years ending Dec. 1, in 1879 and 1878 respectively. Omitting the specie, we have the following aggregates, in specie values, for agricultural products, manufactures, etc., classed together as

MERCHANDISE:

12 *months ending*	*Nov.* 30, 1878.	*Nov.* 30, 1879.
Exports from United States	$739,895,889	$751,812,183
Imports	430,830,228	485,523,711
Excess of Exports	$309,065,661	$266,288,672

Excess of Exports for two years.....**$575,354,324**

That is to say, our country has sold abroad *over five hundred and seventy-five million Dollars' worth* of its products more than we have imported from other countries. This has been paid to us largely in the form of returned government and other bonds held abroad, and partly by sending us specie, of which we received $60,239,811 more than we exported, thus—

GOLD AND SILVER.

12 *months ending*	*Nov.* 30, 1878.	*Nov.* 30, 1879.
Exports from United States	$27,392,551	$25,097,155
Imports	28,823,125	86,837,540
Excess	(—) $1,500,574	+ $61,740,385

The influx of specie may continue awhile, though temporarily stopped by the speculation in grain which has carried prices above the shipping point. This cannot continue long, for either the foreign demand, when the present stock of breadstuffs is reduced, will raise prices there to correspond with the present prices here of grain and flour, or prices here will come down to a figure at which foreign buyers will take our products. Which event will happen, we cannot of course predict with any certainty. The "probabilities" are that there will be some concession on both sides. High prices will diminish consumption greatly. It may be said, in a general way that, other things being equal, foreign nations would buy and consume twice as much of our wheat if it cost them $1.25 a bushel, as they would if it cost them $1.75 per bushel. In the latter case they would much more largely resort to other and cheaper foods. For these reasons the present speculation in grain is to be deprecated. The higher rates benefit the producers very little, and may do them much injury if the result be a failure to find a market for the remaining surplus we have to spare.

Science Applied to Farming, LIV.

More about Feeding Stuffs and Fodder Rations.

There are two very important matters connected with the economical feeding of stock which the teachings of modern science explain, but which too few farmers understand, how to adapt the food most economically to the wants of the animal and the purpose for which it is fed, and how to feed so as to make the richest and best manure.

Either the concurrent testimony of the most advanced science and the most profitable practice is false, or the farmers, of our older States especially, must improve their methods of feeding to farm most successfully. For this they need especially to—1st: Produce better foods by better manuring and culture, and by more careful gathering and housing.—2d. Carefully save the poorer foods and waste products, and feed them so as to utilize the large amount of nutriment they contain.—3d. Use a greater variety of feeding stuffs, and in proper mixtures.—4th. Use more nitrogenous foods—*i. e.*, (*a*) Raise more clover, and, where circumstances will allow, beans, peas, lucern, and other leguminous plants. (*b*) Buy cotton-seed meal, linseed meal, palm-nut meal, bran, and other nitrogenous foods. (*c*) Mix these rich materials with poor hay, straw, cornstalks, and the like, in such proportions as are fitted to the wants of the animals and the purposes for which they are fed. This will bring excellent fodder and rich manure at very low cost. To see why these facts are so, note the table below.

Nutritive Ingredients of Foods and Feeding Standards.

FOODS AND FEEDING STANDARDS.	DIGESTIBLE FOOD INGREDIENTS. Albuminoids.	Carbohydrates including fibre.	Fat.	Total.	Nutritive ratio.
Feeding Stuffs.					
I. HAY.	%	%	%	%	as 1 to
Meadow Hay, poor	3.4	34.9	0.5	38.8	10.6
" " medium	5.4	41.0	1.0	47.4	8.0
" " very good	7.4	41.7	1.3	50.4	6.1
Red Clover, poor	5.7	37.9	1.0	44.6	7.1
" " medium	7.0	38.1	1.2	46.3	5.9
" " very good	8.5	38.2	1.7	48.4	5.0
II. STRAW.					
Winter Wheat	0.8	35.6	0.4	36.8	45.8
Winter Rye	0.8	36.5	0.4	37.7	46.9
Oat	1.4	40.1	0.7	42.2	29.9
Corn Stalks	1.1	37.0	0.3	38.4	34.4
III. ROOTS AND TUBERS.					
Potatoes	1.1	22.8	0.2	24.1	21.6
Sugar Beets	1.0	16.7	0.1	17.8	17.0
Turnips	1.1	6.1	0.1	7.3	5.8
IV. MANUFACTURING AND WASTE PRODUCTS, ETC.					
Sugar Beet Cake	1.8	24.6	0.2	26 6	13.9
Malt Sprouts	12.8	51.6	1.7	66.1	4.7
Wheat Bran, coarse	12.6	42.7	2.6	57.9	3.9
Rye Bran	12.2	46.2	3.6	62.0	4.5
Linseed Cake	24.8	27.5	8.9	61.2	2.0
Palm-Nut Meal	16.1	55.4	9.5	81.0	4.9
Cotton-seed Cake	17.5	14.9	5.5	37.9	1.7
Cotton-seed Meal, decort'd	31.0	18.3	12.3	61.6	1.6
Flesh Meal	69.2	....	11.2	80.4	0.4
Dry Ground Fish	44.6	....	8.6	53.2	0.5
Feeding Standards.					
PER DAY AND PER 1,000 LBS. LIVE WEIGHT.	lbs.	lbs.	lbs.	lbs.	
1. Oxen, at rest in stall	0.7	8.0	0.15	8.85	12.
2. Wool sheep, coarser breeds.	1.2	10.3	0.20	11.70	9.
" " finer breeds	1.5	11.4	0.25	13.15	8.
3. Oxen, moderately worked	1.6	11.3	0.30	13.20	7.5
" heavily worked	2.4	13.2	0.50	16.10	6.
4. Horses, moderately worked.	1.8	11.2	0.60	13.60	7.
" heavily worked	2.8	13.4	0.80	17.00	5.5
5. Milch Cows	2.5	12.5	0.40	15.40	5.4
6. Fattening Oxen, 1st period	2.5	15.0	0.50	18.00	6.5
" " 2d "	3.0	14.8	0.70	18.50	5.5
" " 3d "	2.7	14.8	0.60	18.10	6.0

Rich vs. Poor Foods—Proportions of Digestible Albuminoids, Carbohydrates, and Fats.

Now let us take a poor food, as oat-straw, and compare it with good hay. One hundred pounds of "very good" hay contains about 50 lbs. of digestible material, while the same amount of oat-straw furnishes some 42 lbs. At this rate, 120 lbs. of oat-straw would supply as much nutritive material as 100 lbs. of first quality upland hay. But it would not be worth as much for fodder. Why the straw is worth less appears when we compare the amounts of the different ingredients. The 100 lbs. of hay, with its 50 lbs. of digestible matters, furnishes 7.4 lbs. of albuminoids against only 1.4 lbs. in the straw. So likewise the hay contains 1.3 lbs. of fats, the straw only 0.7 lbs. But when we come to the carbohydrates we find just about the same amounts in both. The straw lacks albuminoids and fats, and these are the most valuable ingredients of the food. The albuminoids make all the nitrogenous tissues of the body, the lean meat (muscle), the gristle, skin, etc., all the albumin and casein of the milk, and part of the fat of the body and of the milk (butter), besides sharing in the production of animal heat and muscular force. The fats of the food are transformed into fats in the body, and share in the production of heat and force. They can not be made into muscle or other nitrogenous tissue, however, because they have no nitrogen. At least, the present evidence is entirely in this direction. The carbohydrates do not make nitrogenous tissue in the body. They are probably transformed into fats, but only to slight extent. They serve for fuel, and seem to aid in producing muscular force. They thus do a work of their own, which, if it were not for them, would be left for the costlier albuminoids and fats. So even if the carbohydrates are not made into flesh, fat, butter and casein themselves, they doubtless do what amounts in practice to the same thing by saving the other ingredients to be used for these purposes. Starch and sugar are carbohydrates, but they are at the same time valuable foods.

The reason for the inferior worth of the straw may be seen from another standpoint in the last column of the table, "*Nutritive Ratio.*" The "very good" hay has 1 lb. albuminoids for every 6 lbs. carbohydrates (1 lb. fat being reckoned equal to 2½ lbs. carbohydrates), while the straw has one pound of albuminoids to 30 lbs. of carbohydrates. According to the feeding standards, for a milch cow a ration with 1 lb. albuminoids to 5.4 carbohydrates will be appropriate, while an ox at rest in the stall will do well with only 1 lb. albuminoids to 12 lbs. carbohydrates. The best hay will serve well for making milk, while the straw has not enough of the albuminoids and fats to make it a proper food for even store cattle. There is a great difference between

Good and Poor Hay.

Upland hay cut during the period from early blossom to full blossom is easily digestible, and has a good percentage of albuminoids. But as it grows older the proportion of nitrogen decreases, and that of woody fibre grows larger, the hay becomes less digestible, the digested material is poorer because it lacks albuminoids, and finally the old hay is not so palatable. For all these reasons the late cut hay is worth far less for feeding. Grass grown on rich soil is richer in albuminoids than on poor soil. Marsh and bog hays lack albuminoids and fats. Clover, timothy, red-top, blue-grass, and the like, grown on good soil, cut early and well cured and housed, make excellent fodder. Poorly manured, cut late, and badly cured, they are very poor stuff. Much of the hay that lies in the barns all through the country is very little better than straw.

The Way to Use these Poor Foods

economically then must be to supply what they lack. To make boots of neck or split leather, or to throw the poor leather away, would be bad economy. With good leather for the parts where the wear comes, the poor leather may be used for backs and linings, and thus be made valuable. So we may feed straw, corn-stalks, and over-ripe or marsh hay to advantage, provided we put other foods with them to supply the albuminoids and fats. Now note in the table the figures for clover, bran, beans, peas, oil-cake, meat-scraps and dry ground fish. They have very little carbohydrates, but are rich in albuminoids and fats.

Cotton-Seed Meal, Linseed Meal, Palm-Nut Meal, and Bran,

are foods whose value farmers in this country are just beginning to appreciate. European farmers long since found out how much they are worth, and thousands of tons of American oil-cake and meal have been carried across the Atlantic to enrich English, French and German foods and soils. The time has come when we must keep them at home if we are going to redeem our farming. The great value of these foods is due to two facts. *First*, they supply the albuminoids and fats in which poor hay, straw, corn-stalks and the like are lacking. *Second*, they make rich manure. How they may be used with poor foods to make good rations at small cost is illustrated in the fodder rations in last month's article. Chemistry indicates, experiments prove, and experience corroborates the principles that poor foods, as late cut hay, marsh hay, straw, corn-stalks, etc., can be utilized and made very valuable by feeding with them nitrogenous foods such as oil-meal, bran, and clover hay, to supply what they lack. It is proved that such mixtures make the very best rations; and still further, that this is one of the cheapest ways to get good manure.

Dried Blood, Meat Scrap and Fish as Food for Stock.

Years ago, oil-cake used to be employed as a fertilizer. Chemistry said it ought to be first fed to stock, that it has a high nutritive value, that in going through the animal machine but little of the valuable material is consumed, and that the residue is worth more for manure than before. Experience proved that all this is true, and now nobody would think of using linseed-cake or cotton-seed meal for manure. Of late, immense quantities of slaughter-house refuse, dried blood, dried intestines, and the like, and still larger quantities of the refuse left after the extraction of oil from fish, are being prepared and used as fertilizers. These ought, like the oil-cake, to be first utilized for food. The idea, though novel to most farmers, is an old one, and has been put into successful practice in many places. In its favor is the unanimous testimony of chemical composition, careful experiments, and the experience of farmers who have used the materials with success. Against it are, the difficulty of preparing wholesome materials, which can be overcome, and the prejudice that only time and trial are needed to dispel.*

The Manurial Values of Nitrogenous Foods

is a matter worthy the thoughtful consideration of farmers. Nitrogen, Phosphoric Acid, and Potash are the most valuable ingredients of manure. Farmers buy them in the better kinds of commercial fertilizers at the rate of from fifteen to thirty cents per pound for nitrogen, six to eighteen cents per pound for phosphoric acid, and three and a half to nine cents per pound for potash. Cotton-seed, linseed, and palm-nut meals, bran, dried blood, meat-scrap, and fish, are rich in these ingredients. Mr. Lawes has made some calculations of the money values of the manures produced from different foods. This he does by assuming that certain percentages of nitrogen, phosphoric acid, and potash are consumed and lost, that the rest go into the manure, and that they have there about the same value, pound for pound, as similar ones in commercial fertilizers in which their value is pretty well settled. I give Mr. Lawes' estimates of the value of manure from a number of foods, and with them the feeding values, as estimated by Wolff, per table in December *American Agriculturist*, page 497.

	FEEDING VALUE. *Wolff.*	MANURIAL VALUE. *Lawes.*
Cotton-seed Cake	$41.40 per ton.	$27.86 per ton.
Linseed Cake	34.40 "	19.72 "
Beans	15.20 "	15.73 "
Wheat Bran	20.80 "	14.59 "
Clover Hay	14.00 "	9.64 "
Indian Meal	22.20 "	6.62 "
Meadow Hay	12.80 "	6.43 "
Oat Straw	9.00 "	2.90 "
Potatoes	5.80 "	1.50 "
Turnips	2.20 "	.86 "
Meat Scrap	55.60 "	—
Dry Ground Fish	46.00 "	—

Mr. Lawes rates the ingredients pretty high and probably allows too little for loss in passing through the animal and in the keeping and handling of the manure. Wolff's rates doubtless require modification for our markets, and the actual worth of the nitrogenous food stuffs would come up to the valuations only where they are properly used with other foods.

W. O. ATWATER.

Wesleyan University, Middletown, Conn.

* For discussion of the subject, and accounts of numerous feeding experiments with these materials, see article on *The Agricultural Uses of Fish*, in Report of U. S. Fish Commission for 1877, and in "American Fisheries" (Orange Judd Company, New York, 1880), page 208.

Farm Buildings Costing $3,000, Complete.

BY S. B. REED, ARCHITECT.

These plans are for compact, convenient and economical farm buildings. The arrangements are similar to buildings on the farm of Mr. Geo. Thorpe, in East Meriden, Conn., with some modifications to meet the more general requirements. There are several objections to having all the principal farm buildings joined together, such as the increased danger from fire, health, offensive odors, flies, dust, and filth, when the barn and house are too close to each other. The buildings shown, fig. 1, with 1st and 2nd stories condensed in figs. 2 and 3, are well adapted, if preferred, to be erected at a distance from each other. The owner in this case considered all the objections, and concluded that they could be overcome by an intelligent arrangement of the several parts, covering all by increased insurance (which would be essential in any case), and also exercising a proper carefulness in management. He claimed that for all this, he would be fully repaid by increased convenience, especially as the unevenness of the adjacent grounds made it desirable to have the buildings on a limited space.

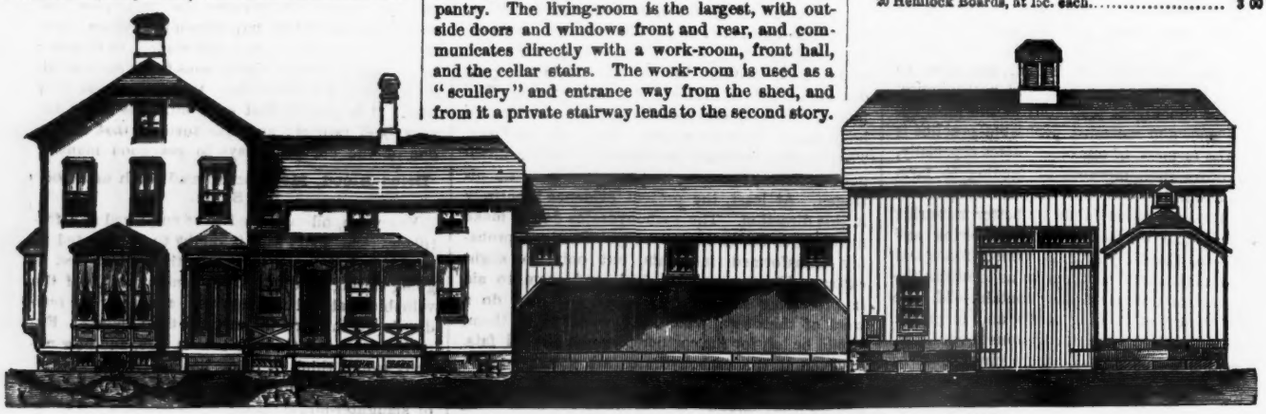


Fig. 1.—FRONT ELEVATION OF HOUSE, SHED, AND BARN JOINED TOGETHER, AND COSTING $3,000.

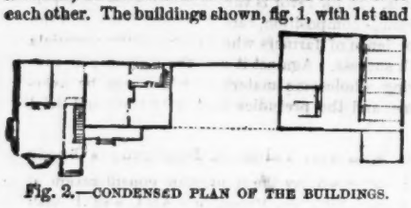


Fig. 2.—CONDENSED PLAN OF THE BUILDINGS.

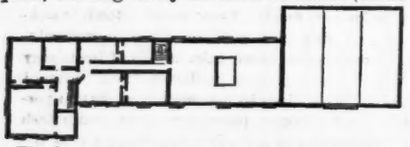


Fig. 3.—SECOND STORY AND LOFT CONDENSED.

Site.—The grounds are slightly inclining to the right, and ending at a brook of running water at a short distance. Having a southward frontage, the north winds are shut off from the yards and principal entrances. In preparing for the building, materials and forces already on the farm were utilized, and the excavating, grading, getting out stone, hauling materials, building the foundations, digging well, etc., were done at odd spells, so that, excepting the wages of a stone-mason, the cost of these parts was scarcely felt....

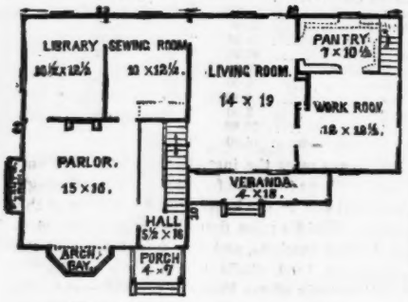


Fig. 4.—FIRST STORY OF HOUSE.

Dwelling.—The *Cellar*, 6½ feet in clear hight, extends under the whole house, with foundations showing 3 feet above ground. The *First Story* (fig. 4), has ceilings 10 feet high, and contains a hall, five rooms, and a pantry. The living-room is the largest, with outside doors and windows front and rear, and communicates directly with a work-room, front hall, and the cellar stairs. The work-room is used as a "scullery" and entrance way from the shed, and from it a private stairway leads to the second story. The parlor, at a distance from the working and living-room, has a bay-window in front, and a plant-window at the side. The hall is entered from the front porch, and contains the main stairs, with the cellar stairs underneath....*Second Story* (fig. 5); ceilings 8 feet high in the main house, and 4 to 8 feet high in the wing. It has eight sleeping rooms, a hall, passage, and six closets. The hall and passage join through a door, which may be fastened to cut off all communication between these parts when desirable. The stairs to the attic are over the main flight. The attic is floored, and provides good storage room....

Barn.—The foundations may be of stone when accessible, laid in trenches below the reach of frost, and the outside walls carried up to 3 feet above ground. All stone-work above ground is faced and pointed on both sides. This unusual hight of the foundations above ground insures increasd warmth to the interior, and prevents decay of the wood-work above. The main sills are laid flat on the stone-work, and thoroughly embedded in mortar, preventing entrance of air or moisture at the joinings. The hight of the principal frame is suited to the use of 16-foot tongued and grooved vertical boarding—this, added to the 3 feet of foundation, gives sufficient hight for practical use. The central space (fig. 6) has large doors at each end, admitting hay loads from front or rear. Head-lights over these doors give light to the interior when the doors are closed.—The cow-stables are 7 feet high, and are placed at the farthest distance from the dwelling. The two horse stalls are 8 feet high. If others are wanted, they can be taken from the bay. All stables and stalls are tightly floored above to prevent dust from sifting through from the hay-loft.....

The Cattle Shed (only partly shown).—The rear and end foundations are of stone, the same as the barn. The open or lower portion is 8 feet high, with fodder-racks and mangers along the side. A door in the side leads to the grounds at the right. The upper portion is 4 feet high at the plate, has a door opening to the yard, and is floored for a hay-loft.

Wagon Shed.—The foundations correspond with those of the dwelling. The lower portion is 9 feet high—sufficient for top-carriages. There is space for a wagon and feed-bins, besides leaving a covered-way from the house to the barn. The entire front is unobstructed,—a strong truss supporting the upper part. Flap-doors at the rear, swinging upwards, give summer ventilation. The upper portion, floored over, and lighted by six small windows, answers for a repairing and storage-room. A trap-door in the center (fig. 3), and a strong hook for tackles, in the ridge above, facilitate lifting heavy articles. Sleighs, wagons, hay-rakes, plows, or any farm utensil may be easily raised to the shop for repairs or storage....

Cost.—The following *Estimate* of materials and cost is given *separately* for the principal parts. Everything is plain and substantial.

DWELLING ESTIMATE.

100 yards excavation, at 2c. per yard	$ 20 00
1,400 feet Stone-work (complete), at 8c. per foot	112 00
45 feet Blue Stone, at 15c. per foot	6 75
3 M. Brick (complete), at $12 per M	36 00
780 yards Plastering (complete), at 25c. per yard	197 50
5,000 feet Timber, at $15 per M	75 00
100 Joist, 15c. each, $15; 275 Wall Strips, 11c. each, $30.25	45 25
547 Siding, 6 in., 16c. ea., $87.52; Cornice Materials, $28.115	52
300 Shingling Laths, at 6c. each	18 00
52 bunches Shingles, at $1.25 each	65 00
20 Hemlock Boards, at 15c. each	3 00
250 feet Tin, 72 feet Leaders	32 00
875 Flooring, 8 in., at 18c. each	67 50
Porch and Veranda (complete)	42 00
5 Cellar Windows (complete), at $4 each	20 00
2 Bay and Plant Windows (complete)	65 00
15 Plain Windows (complete), at $8 each	120 00
5 Small Windows (complete), at $5 each	25 00
32 Doors (complete), at $6 each	192 00
Mantels and Shelves (complete)	32 75
Stairs (complete)	60 00
600 lbs. Nails, $18; Incidentals, $44.73; Carting, $20... Carpenter's labor not included in the "complete" above, $280; Closet Finish, $12; Painting, $125..	82 73 417 00
Total	$1,850 00

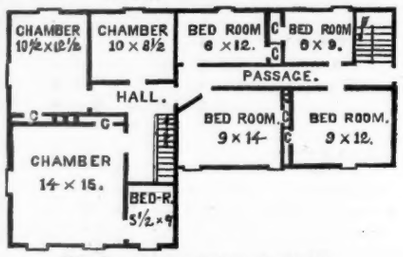


Fig. 5.—SECOND STORY OF HOUSE.

ESTIMATES FOR BARNS AND SHEDS.

31 yards Excavation (complete), at 15c. per yard	$ 4 65
1,400 feet Stone-work (complete), at 6c. per foot	84 00
7,000 M. feet Timber, at 15c. per M	105 00
360 Siding, at 26c. each, $93.60; 200 Joist, $30.00	123 60
Cornice Materials	8 00
500 Shingling Laths, at 6c. each	30 00
90 bunches Shingles, at $1.25 each	112 50
2 Ventilators (complete)	15 00
11 Windows (complete), at $4 each	44 00
7 Doors (complete)	30 00
40 Flooring, 2 in., at 40c. each	16 00
178 Flooring, ¾ in., at 25c. each	44 50
500 lbs. Nails, $18.00; Carting, $20.00	38 00
Painting (complete), $75.00; Incidentals, $19.75	94 75
Carpenter's Labor not included above	200 00
Total	$950 00
Wells, Cisterns, Pens, and Yard Fences	$200 00

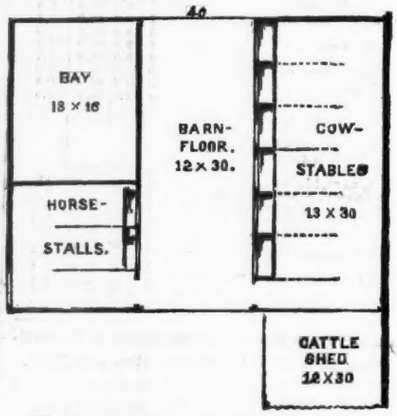


Fig. 6.—THE FLOOR PLAN OF THE BARN.

RECAPITULATION.

Dwelling	$1,850 00
Barns and Sheds	950 00
Wells, etc.	200 00
Total	$3,000 00

The Angus Polled Cattle.

The engravings on this page are portraits of some Angus Polled cattle, popularly known as "doddies," bred by Mr. Thomas Ferguson, of Kinnochtry (Kinnochtry), near Coupar-Angus, Scotland. We have a full account of this famous Kinnochtry herd, sent by Mr. Alexander Ferguson, the son of Mr. Thos. Ferguson, and we regret we can find space for only a short transcript of his extended article. Mr. F.'s herd was started in 1835, and since then has been under a course of constant improvement, until it is now a model herd of these useful and much esteemed cattle. The growing popularity of the polled breeds in the United States is to be noted not only among breeders, and graziers of beeves, but dairymen are losing their prejudice in favor of the dangerous and injurious horns, and are more and more favorably inclined towards polled animals. A remarkably graceful and beautiful polled cow, a cross between a polled bull and a Jersey cow, was exhibited at the last N. J. State Fair, and attracted much attention. It is unquestionable that a useful, docile, and harmless race of cross-bred dairy animals might be produced by crossing our best native cows with polled bulls from cows selected for their milking qualities. The polled cattle have been bred long enough to thoroughly establish their peculiarities; and their prepotency is so strong as to stamp their hornless character upon their progeny with almost unfailing certainty. That a large majority of the calves got by polled bulls are also polled, has already been proved by the successful experiments of the late Mr. Grant, of Victoria, Kansas, from whose herds polled grade steers have already come to market.

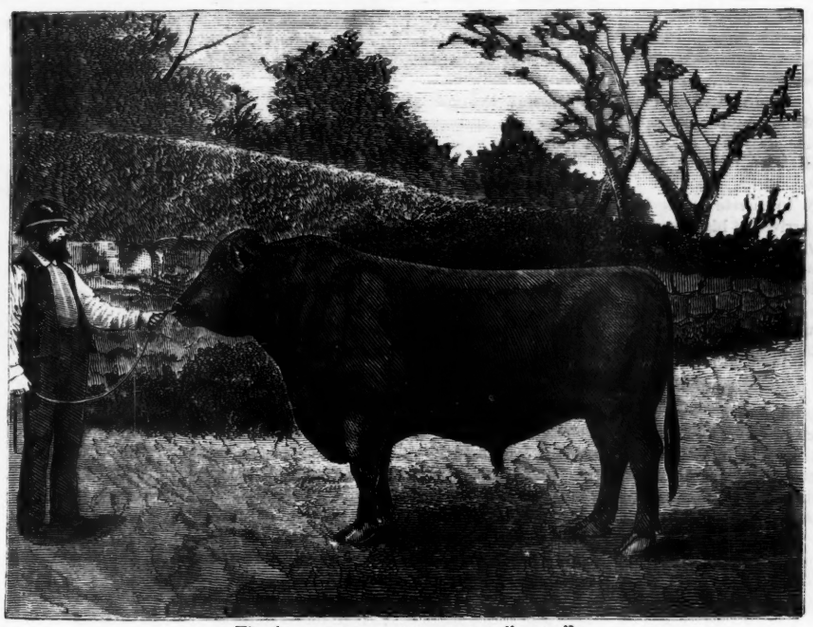


Fig. 1.—ANGUS OR POLLED BULL "SHAH."

The Kinnochtry herd owes some of its excellence to that of Mr. Hugh Watson, of Keillor, a farm near to Mr. Ferguson's, where Mr. Watson had been engaged in improving the breed since 1808. The Keillor herd is noted for producing "Old Grannie," a cow which lived 35½ years, and produced 25 calves, 11 of which are registered in the Polled Herd-book. She milked up to her 29th year, when she ceased breeding. "Old Grannie's" last calf, a bull, "Hugh," was used in the Kinnochtry herd, and bore a striking resemblance to "Shah," the subject of our portrait. The immediate progenitors of this herd have a direct and close ancestry for 111 years, tracing back to the original source of Mr. Watson's Keillor herd. This herd has thus the oldest and best blood in existence, and numerous prizes have been secured by animals of this strain, from that gained by "Old Grannie" at Perth, in her 6th year, up to the first prize at the Highland Society's Show in 1878, taken by "Shah," who was exhibited after having served more than 60 cows during that summer. At the exhibition of the National Society of Ireland, in 1879, *all* the prize polled animals were the produce of Kinnochtry bulls; while the prizes directly taken by members of the Kinnochtry herd number several hundreds. These cattle are accustomed to a bleak climate, and may, therefore, be expected to be hardy; but their natural vigor has also enabled them to survive and thrive in the West Indies, where, after having witnessed the failure of Shorthorns, Herefords, and Ayrshires, a Polled Angus bull still remains healthful and vigorous after several years residence in that hot climate. In short, there is no doubt of the usefulness and value of this breed of cattle, in their own home and in other countries. It remains to be shown that they can be made both useful and profitable here. For the production of beef they stand ahead of all, even of the vaunted Shorthorns. Of this there is no question. The absence of horns renders them inoffensive and harmless to other cattle and safe with their keepers; besides giving them an economical value in the market, on account of their more easy carriage. For the dairy they promise equal advantages. They are fair milkers, as they now exist, with all their aptitude for taking flesh and fat, and the milk is remarkably rich in butter. For crossing upon our large milking native cows they are considered to be of great value, and so soon as a few enterprising dairymen have, by successful breeding and use, removed the baseless prejudice against black and hornless cattle, we look for an extended introduction of polled cows into our dairies. These cattle, at least the strain under notice, have been closely but very skillfully and successfully in-and-in bred, and to this their excellence and uniformity of type are due. Such stock may be made to take on any character we wish, and it will be as easy to make dairy cattle of them, as beeves. The polled head should be the "trade mark" of the dairy, as it may now well be taken as that of the grazier of beeves. The handsome figure of the heifer, a "Favorite," daughter of "Favorite 5th," coming 3 years old, as shown by our portrait, is that of a model cow; she gained first prize at the Strathmore show in 1879, and her heifer calf is said to be remarkably promising. It is a model cow, not for the dairy, we admit, but for a square, massive, symmetrical beef animal, will rival the best of the Shorthorns. We here repeat, these animals are plastic in the breeder's hands, and may be made excellent for use in other ways than for beef. Dairy products are as indispensable as beef, and it certainly seems desirable that the good qualities of the polled breed should be turned to account in both the dairy and stall.

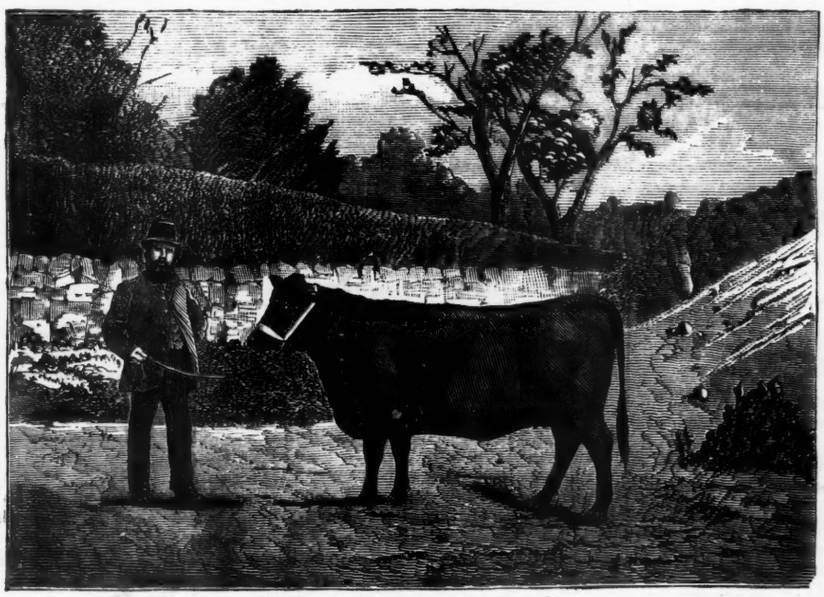


Fig. 2.—ANGUS HEIFER "FAVORITE."

Among the Farmers.—No. 49.

BY ONE OF THEM.

If I make out to break away from my little farm and from the routine of business, I am expected to tell the *American Agriculturist* readers about it.

The Massachusetts Butter Show.

An urgent letter from my old friend, James S. Grinnell — a most active man in all that affects the agriculture of Franklin County, as well as in many other good things, and who honors the position of President of the Agricultural Society of that County —decided me to go to the first State Butter Show ever held in Massachusetts. The movement for a show originated with Mr. Grinnell and Major Alvord, of East Hampton, and it was certainly a great success, as well as an instructive and interesting occasion. The time selected was when the winter meeting of the Mass. Board of Agriculture is held, butter was shown, and dairy subjects discussed in the meetings. The show was not only one of butter, but of butter-making apparatus, of which there is a large variety at every such exhibition. Among other useful things, those which most interested me were

Mr. Bond's Centrifugal Machines,

and Mr. Burnett's statements of his success in the daily use of the only one, a "Weston" machine, which has been put to the test of practical use in

this country. Rev. Henry F. Bond, of Northboro', Mass., has the merit of applying the principle of centrifugal force to the separation of milk and cream as an original inventor. It does not detract from this merit, but only from the profits likely to be derived from it, that the invention had been anticipated in Europe by a few months, nor that an American inventor and maker of centrifegal machines had patented a process ten years before for separating oils and pigments of differing specific gravity, which is applicable to this same purpose. [Our correspondent has been misinformed as to dates. We have a French work, printed in 1872, which describes a centrifugal churn, and we give in another article, engravings from another French work, without date, but which describes the machine of Maj. Sterjnsvard, of Sweden, to which was awarded a prize at the Paris Exposition, 1855! ED.]

Mr. Bond was kind enough to narrate to me in detail the steps by which he arrived at his interesting results, and I think they are worth recording. The idea occurred to him, one day, that this force, which causes all things, made to revolve rapidly in a circle, to tend to fly off away from the center of that circle, acting as it does upon all bodies in proportion to their weight, and incremable indefinitely, might be applied to "raising" cream. After some consideration he called upon a friend and neighbor, Mr. G. F. Windsor, the proprietor of a creamery, and who had machinery which could be used for a test. The first experiment consisted in attaching strong wire bails to two glass fruit jars, holding two quarts each, and suspending them, nearly filled with fresh milk, upon opposite sides of a band wheel revolving upon a perpendicular shaft. Motion, with increasing speed, was gradually given to the wheel and the jars as gradually assumed the horizontal position. After two hours they were examined and the cream found to be entirely separated, and in a firm, solid mass, quite free from milk, so that it could be taken out by the hand as a lump. As to time, it was found that the results at the end of one hour's whirling were quite as good, and that fifteen minutes even served to effect a complete separation.

Large vessels holding 16 to 18 quarts, made of tin, but very much strengthened, were tried, but the force was found to be far too great. The vessels collapsed, and one flying off, caused the other also to be wrecked almost instantly. Fortunately, the gentlemen had taken the precaution to

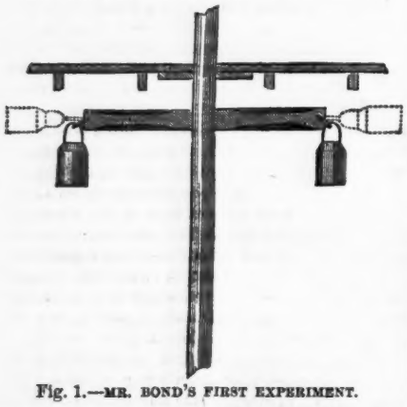


Fig. 1.—MR. BOND'S FIRST EXPERIMENT.

go to the floor above to watch and regulate proceedings. As a direct result of these experiments we have Mr. Bond's machines. An idea may be had of their general form, by placing one tea saucer inverted upon another one. They were small affairs of copper, which Mr. Bond exhibited, one adapted to taking a charge of, say a gallon of milk, and in fifteen minutes completely separating the cream, but it was not provided with any means for drawing off the cream and the skimmed milk, while in motion. The other was arranged either to maintain a constant flow of the two separated products while the milk was flowing in, or to draw off the milk at intervals, while the accumulation of fluid in the revolving vessel caused an overflow of cream.

It is, at first, a little difficult to get the idea of the action which takes place in these machines, and yet it is just as simple as the raising of cream in a pan or other vessel. Take, for instance, the simplest form alluded to—a vessel shaped as in fig. 3, filled to the line, *m*, with milk, and made to whirl by a band upon the pulley, *p*. The first obvious effect will be a depression of the milk in the center, as shown by the dotted line; then this will increase with the speed, until the milk has a position as far from the center as it can get, as shown by figure 4: *m*, *m*, being the surface of the milk, now forming the walls of a perpendicular (hole) cylinder, the shaded part being the milk. It is clear that if the heaviest fluid goes farthest from the center, then the milk will, after a while, settle at the outside, while the inner wall will consist of cream.

Fig. 2.—TWO SAUCERS.

The next problem for the inventors was, how to secure the products thus separated, as they would mingle again, were the motion to cease and gravity again act and bring them to a level within the vessel. This has been solved in one way by the Swedish inventors, in another by the Danish mechanic, who has brought out one of his machines, in still another by Mr. Weston, and in two or three different ways by Mr. Bond. A difficulty which has to be encountered, and which has probably not yet been successfully met, is this: that the cream driven off at such a high rate of speed as 1,200 or 2,000 revolutions to the minute receives damage, in that the butter globules are broken, more or less, so that, as Mr. Burnett intimated at the meeting, the cream was half churned. It is, however, perfectly good for use as cream; but it may be a question whether the butter made from it will be of such high quality as if it were raised in the usual way. This is then the problem, in the solution of which the interest now centers. Mr. Burnett stated also that a green sediment, heavier than the milk, was found to adhere to the walls of the Centrifugal, and this, on examination, proves to be minute organisms inherent in the milk, and a probable chief cause for souring and the setting in of that series of decompositions which milk so rapidly undergoes at a high temperature. The separation of this matter is highly important and advantageous.

Fig. 3.

Other Dairy Appliances.

There was a good deal of improved dairy apparatus exhibited, including several new arrangements for setting milk. Improvements in the "Cooley" system, the Furguson "Bureau" system, Moseley & Stoddard's "Cabinet" system, etc. The Dairy Supply Co. showed their "Perfect Milk Pail," the Nesbit & Rapp Butter Presses, which were new to most of the people, and a number of butter packages. Several new churns were shown, among them, and the newest of all, is one made by Mr. Bullard, whose oscillating churn has been highly approved. This consists of a tub balanced upon an upright rod, and made to swing round and round, guided by an iron ring, of a little less diameter than the tub. Two breakers within the tub cause the cream to dash from side to side. It is a novel affair.

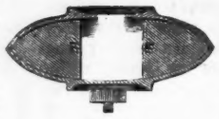


Fig. 4.

The Butter.

There were 119 entries of butter placed in competition for the liberal prizes offered. It was generally presented in ten-pound boxes. The committee seemed to have no difficulty in deciding which sample was unequivocally *the best*, but a good deal of trouble in adjusting the awards, depending upon the mode of setting, kind of salt used, etc. The award of the first prize and sweepstakes, altogether amounting to some $125, or $130 as I am informed, developed the fact, that the recipient, Mr. Chas. E. Fisk, uses the "Perfect Milk Pail," and so far as I could learn, he was the only one who uses it of the whole 119. If any of the other competitors use a pail which excludes the atmosphere of the stable, it would be interesting to know it.

The Addresses and Discussions

were of a valuable character, developing a good deal that was new to me. Prof. Goessmann, of Amherst, stated the results of some recent analyses and investigations of corn-cobs, showing that they have a far greater nutritive value than have usually been attributed to them. In Mr. Grinnell's sketch of the agriculture of Franklin Co., he showed that the lack of railroad facilities had caused a diminution of population of from 15 to 50 per cent in some towns, while the general population of the county had increased largely. The disuse of fences seems to be greatly on the increase in Massachusetts. Mr. Grinnell pointed out to me the farm, where the road forks at the head of Greenfield Street, on which he was born, and still in possession of the family, and worked by himself, whereon there were no fences at all, not even along the highways, except surrounding and perhaps dividing one large pasture lot at a distance.

Milk and Cows.—What Chemists Say.

The last Report of the Secretary of the State Board of Agriculture, of Michigan, contains a paper on "The Analysis of Milk from Different Breeds of Cows," by R. F. Kedzie, Assistant in Chemistry at the State Agricultural College, from which we condense some of the most interesting features. To test the influence of temperature on the rising of cream, three pans of milk in every way alike, were kept at the temperature of 32° F. 55° to 60° and 75° to 80° respectively, for 24 hours. The cream was then removed from each pan, and the amount of fat remaining in the milk determined.

Kept 24 Hours.	*Fat—Per Cent.*
At 32°	1.25
At 55° to 60°	.59
At 75° to 80°	.79
Fresh milk.	3.26

Professor Kedzie's conclusion is, that 50° is the best temperature at which milk should be kept.

With the coöperation of the Professor of Agriculture, a series of experiments was carried on to determine the influence of food upon the quantity and quality of milk. While upon poor food the cows received 5 pounds cut cornstalks, 2 pounds cut oat straw, and 2 qts. of a mixture of two parts Indian corn meal and one part shorts, twice a day. During the period of high feeding the same cows, grade Ayrshires and grade Jerseys, received the cut feed as before, to which were added, 40 pounds of sliced turnips, and 6 qts. of mixed ground feed per day. The amount of milk was much increased, while the percentage of milk elements remained much the same. "If a large amount of rich food is given, a part of it goes to increase the number of quarts of milk, and the rest to the increase of fat in the animal."

The following table of averages of the different breeds, deduced from a large number of milk analyses we reproduce in full:

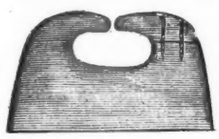
Name of Breed.	*Sugar.* %	*Casein.* %	*Fat.* %	*Water.* %	*Ash.* %
Shorthorn....	3.76	4.41	5.10	86.04	.68
Ayrshire	3.90	5.08	3.75	86.57	.70
Jersey	3.76	4.37	6.87	84.28	.71
Holstein	4.35	4.21	6.84	83.97	.61
Galloway	3.80	5.36	3.40	87.43	.67
Devon	4.23	5.29	3.96	85.71	.81
Grade.....	4.29	4.99	4.01	85.92	.79
Native..	4.08	5.21	3.36	86.64	.71

From this table we see that the Holsteins stand at the head for fat, or butter, and the Jerseys next, while for the production of casein—cheese—the Ayrshires lead, followed next by the Natives. It is to be remembered that this is looking at the subject from a purely chemical standpoint, and it is for the practical dairyman to determine how much it

costs in food, care, etc., to produce a given amount of butter, or cheese, in each case, and whether the products of different breeds, pound for pound, are of the same market value.

A Nose Jewel for Sucking Calves.

C. A. Thresher, Topeka, Kans., sends a description of an improved nose jewel for a sucking cow or calf, which can not slip out of the nose. Usually these are so made as to slip over the septum of the nose, and if they are so loosely fitted as to be slipped on, they may be forced off by the efforts of the animal with equal ease. To prevent this, Mr. Thresher suggests making one of the points loose and fitting it to the lower part by two screws, as shown in the engraving. It can not then be removed from the nose without first taking out the screws. The board should be of hard-wood, half or three-quarters of an inch thick, and may be cut out of the proper shape with a key-hole saw. The holes for the screws, 2 inches long, are then bored, and the point sawed off. There is no need to take out both the screws when fitting the board to the nose; one screw may be drawn and the point of the "Jewel" turned partly around, to be returned when fitted, and the second screw may then be put in its place and all made secure by turning it home.



NOSE JEWEL.

A Gate Without Hinges.

A very convenient gate is here described, which, having no hinges, and not being made to swing, can be used in deep snow, as conveniently as when the ground is bare. A latch post is fixed in the ground, and connected with the fence. This is upright as shown at figure 1, and is made by nailing a piece of narrow batten to a square post, and then a piece of fence strip to the batten, so as to leave a slot on the side of the post, from the top to the bottom, in which the ends of the gate bars fall, when it is closed, as at figure 3. A heel post is set in the ground, and slopes backwards, as seen at figure 2.

Fig. 1.

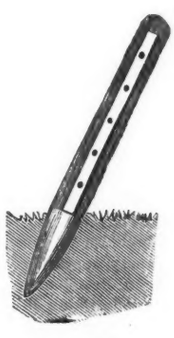


Fig. 2.

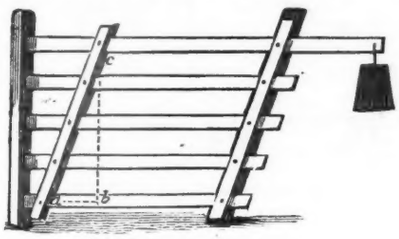


Fig. 3.—THE GATE DOWN.

The gate is fitted to the heel post by bolts, as shown at figure 3. The gate is made in the following manner. The five bars are laid close together upon a level floor. These may be of fence strips, or battens 3 inches wide, and one inch thick. The place for the lowest hole, at *a*, being chosen, the aggregate width of all the bars being added, an equal distance is laid off, as from *a* to *b* on the lower bar, and a line parallel with the ends of the bars at the front, is marked on the bars, as shown by the dotted line *b*, *c*. The upper hole is then made at *c*, and the two binding pieces are fitted, as shown in the accompanying engraving, by carriage bolts, which should work easily in the holes; the ends of the bars being kept even, as in the engraving. The lowest bar may be four feet long, which will be a convenient length for a hand gate. The rear strip is fitted parallel to the front strips, and with the bars is bolted to the heel post. The top bar is 7 feet long, and has a weight hung to the end, which nearly balances the gate, so that it may be swung up, as shown at figure 4, with but little effort, when the balance weight is sufficient to keep the bars raised. For winter use, this gate is a very desirable one.

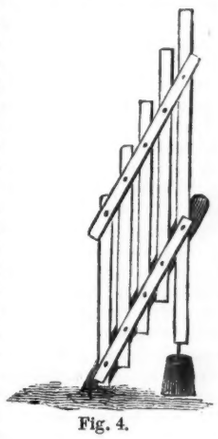
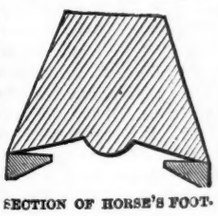


Fig. 4.

Ergot and Abortion in Cows.

An interesting account of the growth of Ergot, or "Spurred Rye," as it is often called, is given in the "Live Stock Journal," (Eng.), for Oct. 31st., by Prof. Henry Tanner. In the illustrated article on Ergot, in our October number, page 388, and also in previous articles on these destructive pests, it was shown that moisture is necessary for the development of most fungi. In England and throughout Europe generally, the past season has been remarkable for its abundant rains, and, as a result, we should expect an abundance of Ergotized grain and grasses. Such is the case, and as a sequel, to quote the Professor: "We regret to notice that the last few months have been more than usually remarkable for abortion among cows." The question of prevention is a serious one, but it can be satisfactorily answered by not allowing cows to run in pastures where the grass has gone to seed. The Ergot appears only in seed, and is an abnormal development from the substance of the seed; while the grass in the pasture is without seed-bearing heads there is no danger. The seed-stems standing about these fields, are so many danger-signals to the stock-master, who knows the liability to this production of Ergot. The scythe should be used to cut down any places in the pasture, where the grass is "running to seed." The lesson taught by the wet season abroad, is an important one for our people in its relation to the excessive production of Ergot, and the prevalence of abortion among cows.

Corns on Horses' Feet.—Corns are rarely absent from flat-footed hoofs. They are caused, in the majority of cases, by stones lodging in the space unwisely left by blacksmiths between the inner edge of the shoe and the sole of the foot, as shown in the engraving, which represents a section of a shod hoof. This causes a bruise, which soon becomes inflamed, and the horn being unyielding the products of the inflammation can not escape, and remain as a constant source of tenderness and pain. The remedy is to keep the space stuffed with tow soaked in glycerine, or otherwise to lay a leather sole under the shoe to protect the sole of the foot.



SECTION OF HORSE'S FOOT.

Does it Pay to Winter Turkeys.—The general practice in the poultry districts is, to fatten the early broods of turkeys for Thanksgiving and the later ones for Christmas, and to send each lot to market in a lump. The advantages of this are, that the warmer weather of autumn is favorable for fattening, and less food is consumed. The money also comes in a pile, and much labor is saved. But occasionally we find a farmer who feeds his turkeys straight on through the winter, selling in small lots, when he can get his price. When we ask him for his reasons, he tells us that there is always a difference in selling farm produce at the buyer's price, and in selling it at your own price. The turkey crop is mainly disposed of at Christmas—and he can always get a better price if he waits until February and March. The turkeys are all the while growing, and are wanted in the village markets at reasonable paying prices. There is also a good demand for them as breeders in March and April. It pays him to winter his flock.

Inside Fastenings for Barn-Doors.

"A Reader" asks us for some good methods of fastening barn-doors from the inside. In the Nov. number, 1877, an illustration was given of a fastening, which may just meet the case, and as this question is of general interest, the cut is again used; we present it with two other methods which have the recommendation of long, and quite general use, rather than newness in their favor. In figure 1, the bars, three in number, are made of hard-wood, 1¼-inch thick, and 3 inches wide. Two of these are made to slip loosely through iron staples, driven into the batten of the door, and are joined in the middle by a bolt. A third and shorter strip, the "guide," has its upper end fastened to the other two, by the bolt above mentioned, while its lower end is secured to the door by a screw, in the position shown in the engraving. The working of the fastening is easy to see. When the two long bars are upright, as shown by the dotted lines, their ends pass above the door, and into mortises in the ceiling and floor, and are held in place by the guide. By pushing the middle part of the fastening to the left, the ends of the bars recede from the mortises, and the door is free to be opened. Aside from the secureness of the fastening, it is always in place, and very easy to operate. In figure 2, a much simpler method is shown, which consists of a single, long, hard-wood bar, a little longer than the door, and fastened to the middle batten by a bolt. The ends of the bar pass into slots cut in the beam above, and the floor below. The upright position of the bar in the engraving, shows when the door is fastened, and the dotted line indicates where the bar is pushed, when the door is opened. In working this fastening, the bar is grasped by the hand above the bolt, and one foot is used to push aside the bottom.

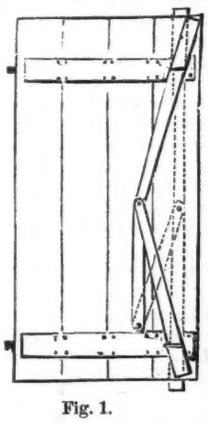


Fig. 1.

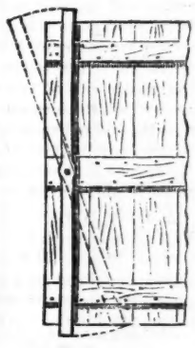


Fig. 2.

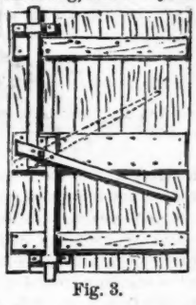


Fig. 3.

A third form of inside door fastening, is given in figure 3. This consists, as the engraving plainly shows, of two upright bars, fastened in the middle

to a lever, one on each side of the point, and the lever is bolted to the door. The other ends of the fastening-bars pass through blocks of wood, cut to fit and nailed to the door. The fastening is at the top and bottom, as in the other two methods, the bars being moved out of and into the mortises, by the long lever. The door is shown fastened, and the lever is downward; the dotted line gives the position, when the bars are withdrawn from the mortises and the door is ready to be opened.

Hints and Helps For Farmers.

HOW TO PUT UP A WAGON BOX.—To get rid of the cumbersome wagon box, or bed, is an interesting question for those who have not much shed room to spare. The most convenient way is to hoist it up over head in the manner described in the *American Agriculturist*, Sept., 1873; but the easiest and cheapest method of disposing of it is as follows: To the side of the wagon shed, fix two strong bars supported by braces, as shown in the engraving. The wagon is driven close to these, the hinder end of the box is lifted off from the wagon, and the forward part swinging around, permits the end to be placed on one of the bars. The forward part is then lifted upon the bar, and the job is done in about as short a time, as it can be described; and furthermore, one man can do it alone.

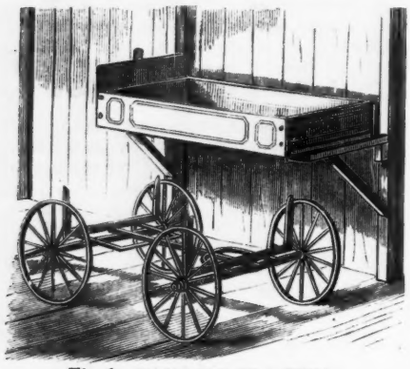


Fig. 1.—WAGON BOX ON A SHELF.

A GATE WITHOUT HINGES. — A subscriber in Pennsylvania, sends a description of a gate, which is without hinges. It turns upon a pin, of 1¼-inch round iron, fixed in a block of wood or a stone, under the heel-post, and a pin bent to a proper shape, fitted in the top of the heel-post, as shown at figure 2. This method of hanging a gate is cheap, simple, and more secure, than to use hinges.

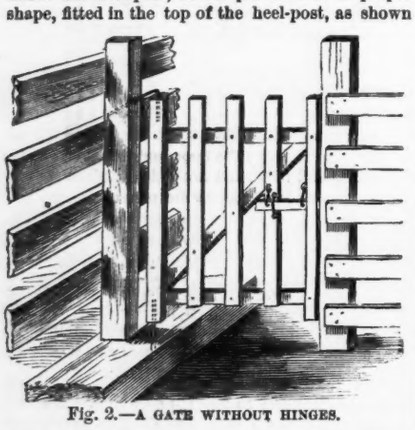


Fig. 2.—A GATE WITHOUT HINGES.

NON-FREEZING PUMPS.—A mute but very eloquent expression of disappointment, is frequently given on a cold morning by a number of thirsty cows standing around a water trough, and a pump solidly frozen up, while their owner is vainly trying to thaw out the pump, by pouring hot water into it from a kettle. If those thirsty cows could speak, they might give some good advice to their thoughtless owner, but it is their fate to suffer and bear such disappointments, without power of remonstrance. We will offer a little suggestion, as to how the trouble may be avoided. In the best pumps, such as the "Universal" and others which are continually brought to notice in our business columns, provision is made to avoid freezing up in cold weather. While the "Submerged" pump, being entirely under water, can not freeze, unless ice forms at the bottom of the well. Some farmers are not so fortunate as to possess anything better than a common wooden pump, yet even this may be arranged in a simple manner, so as to be always in working order, in the coldest weather. Remove the covering of the well, and bore a half-inch hole in the pump-tree, 2 feet below the surface of the earth. In this hole, insert a tube of elder wood, with the pith removed (fig. 3). When the pumping is done for the time, the water which is left in the pump, will escape from the tube, and freezing will be prevented.

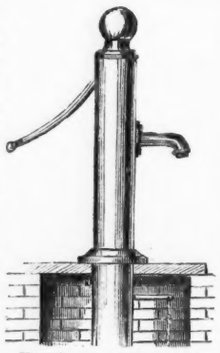


Fig. 3.—NON-FREEZING PUMP.

POULTRY FOUNTAINS.—"J. H. S.," Quincy, Ill., recommends a simple water fountain for poultry. This, (fig. 4), consists of a common stoneware jug, which is filled with water, and inverted in a basin, or wooden trough. A peg may be fixed in the trough so as to enter the mouth of the jug, and prevent it from being pushed to one side. Four stakes driven in the ground, or otherwise arranged, so as to keep the jug always in its upright position.

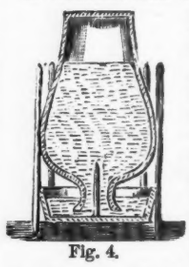


Fig. 4.

A WESTERN HAY GATHERER.—It must not be supposed, that in the great wheat growing regions of the northwest, grain only is produced. The fact is, that those vast prairies are magnificent grassy meadows, which in places yield as much as four or five tons of hay per acre. It is here where the "Blue-joint" (*Calamagrostis Canadensis*,) so well known in the broad "beaver meadows," and river-flats of the Northern, and Western States and Territories, flourishes so luxuriantly; and this grass, when cut in good season, is found to be equal to the best of our cultivated grasses for hay. A large quantity of this hay is cut every year, and put up for the purpose of supplying the numerous teams employed on the enormous wheat farms which are now worked in the localities referred to. Cheapness of operation is a marked necessity in doing business in a large way, and the hay cut upon those broad prairies, is put up for about one dollar per ton. The method of working, is as follows: The grass is cut by mowing machines, and as it rarely rains, the cutting goes on steadily until sufficient has been laid down. A rake is then employed to gather, and carry it to the stacks. The implement used, is a long frame, which is drawn upon runners, as shown at figure 5, and is made of a principal bed-piece or sill to which the runners are fastened. Side posts are fixed to the runners, and these are connected by cross-bars which confine the hay. Long rake-teeth are inserted in the bed-piece, and these gather up the loose hay, which is piled up in the frame. When this is filled, it is drawn to the stack. It is readily seen that this contrivance may be made of varying capacity, either small enough for use in getting in hay on a small farm, or large enough to gather a ton at once if needed.

A HAY WEIGHING RACK.—"L. A. W.," gives us a description of a rack for weighing hay. It is made to rest upon a platform scale, and is five feet long, two and a half feet wide, and higher at the back than at the front, as shown in figure 6. It is made of light boards, and will hold 350 lbs. or more of hay, which may be weighed at one time. In using the rack, small blocks are put under the sides, *a*, *a*, and when it is filled, these are knocked out so that the rack drops upon the platform of the scale. By attaching cords to the four corners of the rack, the hay may be weighed by means of a common steel-yard of sufficient size for the purpose.

What is Atavism?

The term Atavism, from *atavus*, an ancestor, is applied to the recurrence of any peculiarity of an ancestor in a succeeding individual, after an intermission of a number of generations. An illustration will make the above definition clear. A herd of polled hornless cattle had existed for a long time in the Kennebec Valley, but finally became extinct. Thirty years after the last hornless cow was killed, a polled animal made its appearance on the same farm as an out-crop of the old herd. Under the head of *Reversion*, Mr. Darwin gives many examples of atavic descent. Striking instances of atavism are found among pure-blood pigeons, where there is an occasional bird with the characteristics of the wild pigeon strongly developed. During the last century, certain breeds of sheep have been bred with scrupulous care, yet now and then a spotted or "black sheep" makes its appearance. The same tendency to revert to an old ancestral form is possessed by plants, and especially is this the case if there is provision made by nature for inter-crossing, and the formation of hybrids. Dr. Miles, in his "Stock Breeding," mentions a case where a woman had a sixth finger on one hand; out of eight children, only one possessed an extra finger, but both hands were affected. One of the sons had two sons, and seven daughters, all with hands as usual. One of these daughters had a son with six fingers on each hand. In this case the defect was absent for two generations, and then returned to the family, appearing in both hands instead of one.

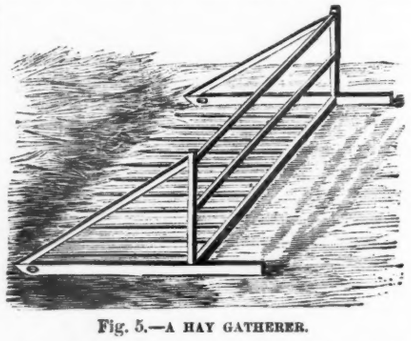


Fig. 5.—A HAY GATHERER.

The medical journals give cases where insanity, and other striking disorders have been traced back to some remote ancestor; the trouble, as it were, retaining its hold for a number of generations unobserved, and then came out because the subject was especially adapted for its development. Such peculiarities are dormant, or as they are usually called, *latent* characters. With this view, a living being is a wonderfully complex bundle of tendencies and counter-tendencies; swaying and balancing between the contending forces of *heredity*, or the inclination to be like the immediate parent, and *atavism*, or *reversion*, the clinging to old traits, which, if left to act alone, would sooner or later take all forms of life back to the original ancient types.

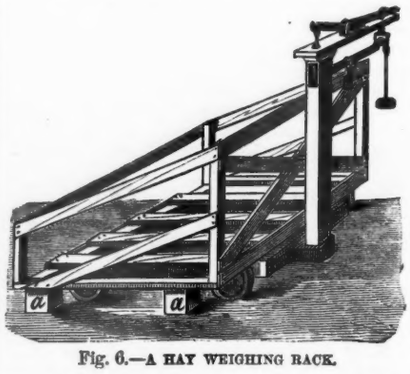


Fig. 6.—A HAY WEIGHING RACK.

The Villager's Pig.—How To Keep It.

A large number of our village subscribers keep a cow, and one or more pigs, just to save the waste from the table, and to help in the support of the family. Both are important sources of income when properly managed. The inevitable waste from the kitchen in an ordinary American family amounts to a good deal in the course of a year. It may as well be turned into pork, sausages, head-cheese, spare ribs, and lard, as to be thrown away. A neighbor, who has a vegetable garden, and studies thrift, has just slaughtered two pigs, weighing 598 lbs, and worth $35.88 at the market price. The manure made from them is worth ten dollars at least. Two small pigs were put into the pen April 6th, and came out well fattened November 21st, about seven months and a half. The food consumed consisted mainly of sour, and buttermilk, kitchen waste, small potatoes, cabbage, turnips, sweet corn, wind-fall apples, and other wastes from the garden. To this was added enough Indian meal to keep them constantly full fed from spring to fall. A good pen is an important item in feeding pigs. The sleeping apartment should be dry, and be kept well littered with straw, leaves, or sea-weed. From one-half to two-thirds of a pig's life is to be spent in sleep, if it is well treated. Give the pig the materials, and he will make a nice bed and keep it clean. The remainder of the stye is of less importance. There should be room enough to compost the manure, liquid and solid, with garden soil, corn stalks, weeds, and other refuse matter. The pig is unrivalled as a manufacturer of compost. Its good effects will be seen in all parts of the garden, where it is spread the following season. Regularity of feeding, three times a day, is one of the secrets of success. This may be at your own meal times, if your wife is a good house-keeper and keeps a clock in the kitchen. Good digestion depends upon regular meal hours for man and beast. There is then very little temptation to over eating, no cloying, and no spells of refusing food. A pig should never lose a meal after he is put into the pen, and should never be hungry enough to squeal. It requires some judgment in equalizing the rations, as well as in regulating their time. Much less of Indian meal is required for a ration, than of cooked potatoes, and less of potatoes than of kitchen waste. If anything is left in the feed trough, the ration has been a little too large, or not quite good enough. A pig should have all he can eat up and digest. A variety of food should also receive attention. The raw vegetables and fruits from the garden are excellent appetizers, and enables the pig to consume more meal. The meal may be mixed with cold or boiling water, with milk, or boiled fruits and vegetables, as suits convenience. It may be varied with unground corn, buckwheat, or a mixture of ground grains. The time spent in caring for a pig usually comes at meal hours, and may be balanced by what we learn in the school of economy. There is perhaps no animal that will exhibit more satisfaction, and give greater returns for good care and feeding, than a pig; and on the other hand a hungry one without a warm home—one that has not had a proper bringing up—can make itself exceedingly disagreeable, both as to general appearance and the noise that it will produce; besides, such an animal is without profit. As a rule, it pays the villager to raise his own pork, and it pays him the greatest profit when he takes the best care of his pig. C.

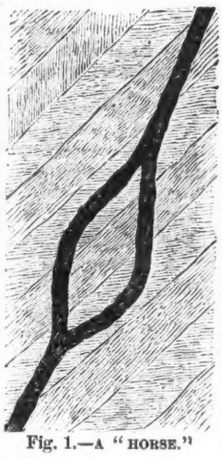


Fig. 1.—A "HORSE."

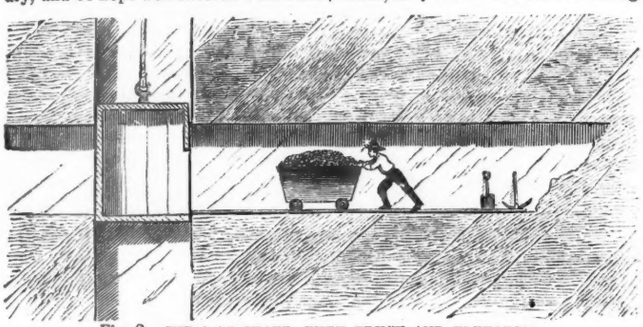


Fig. 2.—VIEW OF SHAFT, WITH TRUCK AND ELEVATOR.

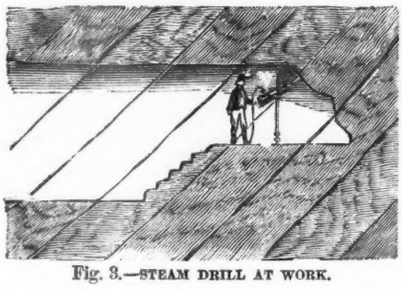


Fig. 3.—STEAM DRILL AT WORK.

Mines and Mining Terms.

It will be remembered that in the January number the various mining terms, *bed*, *vein*, *float*, *winze*, etc., were explained, and we closed with the miners at work. Sometimes there is found in a vein where it is greatly enlarged, a large mass of barren rock containing no valuable mineral and of a kind different from that of the vein; this is known as a *horse*, shown in figure 1, where the vein matter is seen at each side of the enclosed mass or "horse." To meet with a horse in a large vein is a great disappointment, and it often occasions an enormous increase in the cost of working the vein. In large mines a "cage" is used, which is precisely similar in its construction and working to the elevators used in large buildings in the cities; one of these is shown at figure 2, in the shaft, and a truck loaded with one from a level is being pushed by a miner to the cage to be taken up. Levels are often driven in two parts, so that more men may be employed and the work hastened. The manner of doing this is shown at figure 3, where a steam drill is seen at work in the upper part of the level. One of these steam drills is shown in detail in figure 4; a drill of this kind will do the work of a hundred men with hammers, and is able to make 1,000 or even 2,000 strokes in a minute. The diamond drill does not strike the rock, but turns round very rapidly, and consists of a hollow bar of steel like a tube, with black diamonds set in the edge. As this is turned it cuts a channel like an **O** in the rock, leaving a "core," which is broken off, and gives a sample of the kind of rock being bored. This kind of drill is used for exploring, and holes are often made and "cores" taken out for as much as 70 or more feet ahead of the open working, thus showing for that distance the exact character of the work to be done and the character of the ore to be taken out. In exploring the body of a horse, a drill of this kind may save much time and great expense, avoiding much unprofitable work. When the ore is raised to the surface it is crushed in a stamp mill. A 10-stamp mill is shown at figure 5. This consists of heavy masses of chilled cast iron, at the ends of long rods. The rods are set in a frame, and have catches upon them. A shaft, turned by the pulley, has cams upon it, which engage with the catches on the rods. These cams lift the rods and stamp heads, and then release them, when the stamps fall with great force upon chilled iron blocks under them, in a trough or box, crushing the ore that is thrown into the trough, into fine powder. The crushed ore, if silver, is taken to the smelting furnace, but if gold, is amalgamated with mercury, and is thus separated from the rock or any base metal which may be mixed with it. The gold is freed from the mercury and melted into bars, and the silver is cast into blocks called "bricks," fig. 6, of which great piles have been seen heaped up on the pavements in front of express offices in the mining towns. The gold and silver thus obtained is partly sent to the mints to be coined into money, and more or less is worked up into jewelry, and ornaments of various kinds, of watches, chains, spoons, forks, plate, and numerous other articles of use; some gold and silver are used in photography, and some in medicine; in fact, the uses of these "precious" metals, so-called because they do not rust or waste by oxidation, are much more numerous than is generally supposed.

Fig. 4.—STEAM DRILL—ENLARGED VIEW.

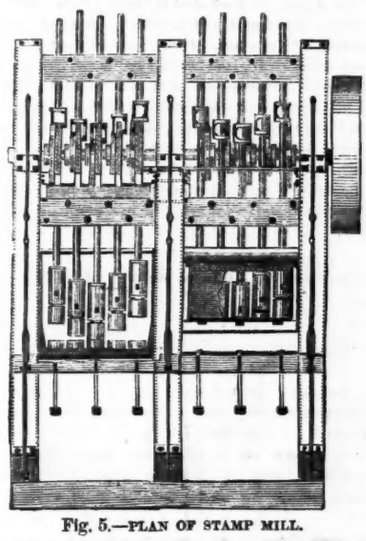


Fig. 5.—PLAN OF STAMP MILL.

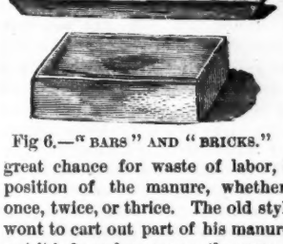


Fig 6.—"BARS" AND "BRICKS."

Spreading Manure from the Cart Tail.—It is pretty well settled, that barn-yard manure, or the compost heap, can be spread at any season of the year, without much waste from evaporation. There is, however, a great chance for waste of labor, in the final disposition of the manure, whether we handle it once, twice, or thrice. The old style of farmer was wont to cart out part of his manure in the fall, to put it in large heaps upon the ground that was to be

broken up for corn, in the spring. After the ground was plowed, and harrowed, and the rows marked, the large heaps were distributed in small piles, by the cart, and then were dropped by the hod, or basket, in the hill. This made three handlings of the manure before the crops could use it, and added very largely to the cost of the fertilizers. Whether we use manure as a top-dressing, or for cultivated crops, it makes a large saving to handle it but once. For top-dressing grass lands, it is clear enough, that manure is most evenly, and economically, distributed from the cart tail. So far as hoed crops are concerned, and the oats, and grass, that follow, it is probably better that the manure should be spread broadcast than that it should be dropped in the hill. The saving of the two handlings of the manure is clear gain. It is the common practice in some districts to spread fertilizers late in the summer or fall upon the sod that is to be broken up for hoed crops the next season. They claim that the manure is more equally distributed, and that by increasing the growth of grass the sod is made richer, and better crops are secured the following season. We need to carefully study the shortest and best methods of getting the fertilizers into the soil where they can do their work.

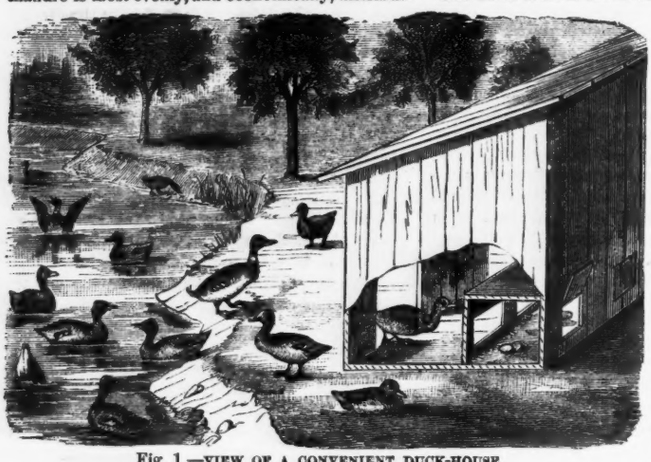


Fig. 1.—VIEW OF A CONVENIENT DUCK-HOUSE.

Will it Pay to Raise Ducks?

Two years' experience with a flock of Pekin ducks has convinced the writer that there is a satisfactory profit in raising these birds. But the conditions must be favorable, and these include a water-run, either a stream or pond, in which the ducks can gather food, and a house conveniently arranged for securing the eggs. The first year a beginning was made with a trio of the birds, and these were conveniently accommodated in an ornamental rock-work house among some evergreens on a side lawn. A neighboring stream of water

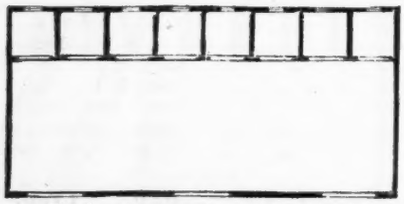


Fig. 2.—GROUND PLAN OF THE HOUSE.

kept the ducks out of mischief in the day-time, and they came home regularly at night; they were not let out in the morning until the eggs had been secured. The two ducks laid 202 eggs the first season; of these, some were sold, some eaten, and the remainder set under hens. "Bad luck," in which may be included the destruction of three-fourths of the eggs when under the hens, and the killing of several of the sitters by a stroke of lightning, which went through the poultry-house, reduced the produce of young ducks to between 30 and 40. But one of these died after leaving the nests, which goes to prove the hardiness of this variety. The young ducks thrived well, and when six to eight months old weighed five to six pounds on the average. A large portion were killed and eaten; the flesh was found to be remarkably juicy and tender. The retail market price of such ducks was about 25 cents a pound, so that each would be worth at least $1.25. The second year it was necessary to provide larger accommodations, and a house was made for them on the bank of a pond adjoining a brook in which there are abundance of water-cresses and other food, both vegetable and animal. The water-cress is eaten with avidity by ducks, and has myriads of snails and other water animals upon it. A plan of this house is shown at figures 1 and 2. For 50 to 100 ducks it should be 30 feet long, 12 feet wide, and from 4 feet high at the front to 6 or 8 feet in the rear. Entrance doors are made in the front, which should have a few small windows. At the rear are the nests; these are boxes open at the front. Behind each nest is a small door through which the eggs may be taken. It is necessary to keep the ducks shut up in the morning until they have laid their eggs, and a strip of wire netting will be required to enclose a narrow yard in front of the house. Twine netting should not be used, as the ducks put their heads through the meshes and twist the twine about their necks, often so effectively as to strangle themselves. To avoid all danger, the wire fence should have a 3 or 4-inch mesh. The Pekin ducks are prolific layers; a fair yearly product for a duck in its second year is 120 eggs, and 60 to 80 for a yearling. Their feathers are of the best quality, white, with a creamy shade, and 5 ducks weighing 5 pounds each, have yielded, killed in the winter-time when fully feathered, more than one pound in all. It will be right to pick the ducks when moulting is beginning; the feathers are then loose and are picked easily, and without injury. This will considerably increase the yield of feathers, and will prevent a useless loss; otherwise the loose feathers from 20 ducks will be found spread over their whole range.

Separating Cream by Centrifugal Force.

The Swedes have long been known as most expert dairymen, and for many years past those of the craft in other countries, have been borrowing ideas and practices from them. Our cold setting of milk for cream is an old Swedish practice, and the deep cans now in use, were originally Swedish, and some of our newer churns have a similar origin. A most important innovation, and, perhaps, a grand improvement in dairying, which has been recently introduced into this country, is the invention of a Swede. It is known as the "Centrifugal Creamer," and is intended to remove the cream by mechanical means—centrifugal force, in fact—to take the cream from the new milk, and thus avoid the necessity of setting the milk at all, whether in pans or in deep cans, with all the trouble, time, and cost, incident to that so far necessary and risky process. Here with we give engravings of this new dairy machine, which promises to make a revolution in our dairy practice. It was first exhibited at the great English dairy fair, at Kilburn, where it obtained a silver medal, and at Haarlem the Agricultural Society awarded it a silver-gilt medal. Its inventor claims for it the following advantages. The cream can be separated from the milk as soon as it is drawn from the cow and aired; the use of ice is unnecessary; there is no setting of milk for the cream to rise; *all the cream* is taken from the milk, and the production of butter is consequently increased; the skimmed milk is perfectly fresh, and may be used at once for any desired purpose, without loss of sweetness; the quality of the butter is improved, as the cream is separated in a perfectly pure condition; the process is easy and simple; the machine is easily cleaned; lastly, the separation of cream may go on continuously so long as fresh milk is poured in and the skimmed drawn out. The operation depends upon the principle, that in a rapidly revolving vessel, the heavier contents are forced, by the action of their weight, to the outside, while the lighter gather in the center. The work

Fig. 1.—THE "CENTRIFUGAL CREAMER."

is done as follows: The receiver, which is made of steel, and is supported by a vertical axis turned by a pulley 6,000 in a minute, is filled with milk, by means of a funnel, which passes into the chamber, through the central column, *a*, fig 2 The rapid rotary action immediately begins to separate the heavy milk from the light cream, and in a short time the outer layers of milk are completely separated. As the fresh milk is poured in, this separated milk is forced by it into the tube, *b*, and arrives through it into the chamber, *B*, from which it escapes by a pipe. The cream in the center being continually augmented by the process of separation is raised by the entering milk into the tube, *c*, and passing by the tube, *f*, into the chamber, *C*, escapes by another pipe into proper receptacles; thus the process continues, so long as any milk is introduced. It should follow that as water is heavier than the cream, if a quantity of it should be introduced when the milk is all in, the cream remaining may be separated to the last drop, until the milk, too, is

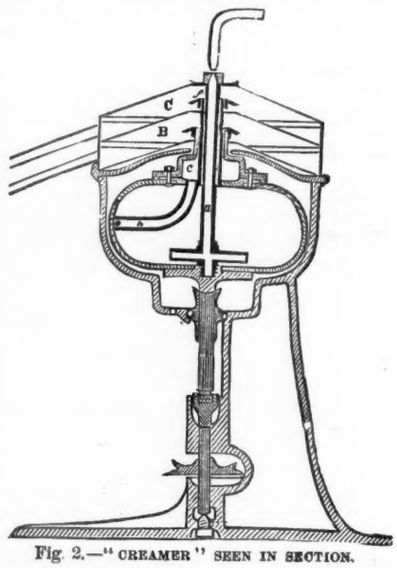


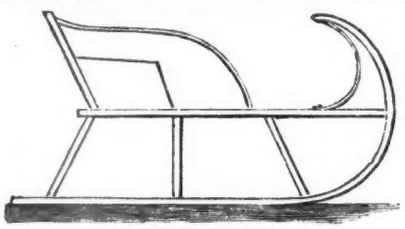
Fig. 2.—"CREAMER" SEEN IN SECTION.

exhausted, when a stream of water passed through for a time, would cleanse the machine perfectly.

This conclusion, however, is our own, and we do not know that it is so claimed by the inventor, but it is a poor principle that will not work out its own theory as well with one liquid as with another. If the machine will separate one composite liquid into its heavier and lighter parts, it should certainly separate another, and this machine should be expected to remove cream from water as well as from milk.

Making a Jumper.

A "Jumper" is a light, one-horse sleigh, made to carry passengers, or a light load. It may be made of hickory or oak poles, dressed into shape, and a few bolts; or the joints may be mortised into tenons in the usual manner. A rustic jumper made of timber with the bark on, is a very appropriate rural conveyance, and would answer many common purposes. To make a neat and strong one, proceed as follows: Choose two hickory poles 4 inches thick, and dress them sufficiently, steam the smaller ends, by wrapping bagging around them, and soaking them in boiling water. When they are flexible, bend them into the desired shape, and fasten them with cords until they are set, and will retain the bend. These are the runners. The posts are mortised into these runners, and into the benches in the usual manner, and the sides are connected by cross-benches bolted with carriage bolts, or mortised, and are braced sufficiently to make the frame stiff. The floor is laid upon the benches, and the body and seat are built upon it. The front



A RUSTIC JUMPER.

is closed in with basswood, or other boards, steeped in hot water, until made to bend into the proper shape. The shafts are fitted to eyes put through the front part of the runners in the ordinary way. The runners should be shaved off smoothly on the bottom, to make them slip easily.

Barn and Barn-Yard Rakes and Brooms.

In cleaning barns and barn-yards, very stout rakes and brooms are needed. Some farmers, and even dairymen, never think it necessary to do more towards cleaning their barns than to fork out the litter, leaving the floors still covered with small particles of filth. It is now considered by the best dairymen, and very rightly so too, that perfect cleanliness in barns is absolutely necessary to the production of pure, clean milk and good butter; and cleanliness certainly includes clean floors. To preserve this cleanliness, every barn should be provided with a strong rake and a stiff broom. A rake which will be found useful, and that can be made at home, is shown at figure 1. It is made of a head block in which some curved teeth are inserted, and to which a convenient handle is fitted. This will be found to gather the manure better than one with straight teeth. A broom may be made of birch twigs placed between flat pieces of board, as

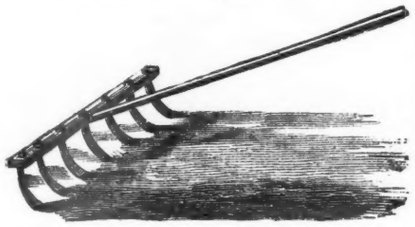


Fig. 1.—BARN-YARD RAKE.

shown at figure 2; the pieces being bound together firmly with twine, or preferably, with wire. A handle is fitted in such a position as to easily push the broom in sweeping; it may also be drawn forward like a rake. A useful broom is made of rattan, which is very durable for farm use, and can be obtained at most well stocked implement stores.

The Precocity of the Jerseys.

Col. David Taggart, of Northumberland, Pa., President of the Penn. Agricultural Society, at that Society's remarkably successful exhibition last fall made some statements of his experience with Jersey cattle. At the request of several of our readers who heard him, he has written out the essential

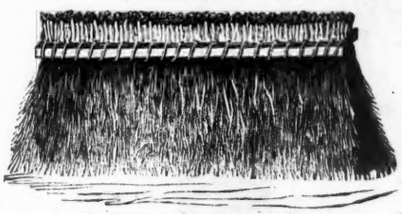


Fig. 2.—A BIRCH TWIG BROOM.

points of his remarks for publication in the *American Agriculturist*. Colonel Taggart writes:

Twenty-eight years ago, in company with three other aspiring farmers' boys, I visited the great "York State" Fair at Rochester. Here we found nearly two hundred magnificent Shorthorns, scores of fine Devons and Herefords, and *four* little Jerseys. I said to one of my fellows, that "if I was ever fixed for keeping a herd, that the Jerseys were my sort."—I have owned one or more Jerseys for the last sixteen years, but only since 1873 could I give them my personal attention. I have now nine cows in my little herd, and I propose to give you their achievements in calf-dropping. I reared all but the oldest two. "Ruby," dropped March 2, 1872, had her first calf June 3, 1873; her second, May 15, 1874; third, March 29, 1875; fourth, (Bessie), Feb. 1, 1876; fifth, January 2, 1877; sixth, (Mary), Nov. 12, 1877; seventh, Oct. 5, 1878; *eighth*, Aug. 27, 1879. Whereas, you will perceive, she was not quite 7½ years old. At the same rate when she has had a calf and a half more, she will have gained a whole year. She is a large, full-barrelled, and hardy cow, in spite of her early and rapid breeding.

"Nelly," dropped April 7, 1873; calved June 10, 1874; July 27, 1875; July 9, 1876 (Annie); June 27, 1877; April 27, 1878; March 31, 1879; or six calves before she was 6 years old...."Bessie," Feb. 1, 1876; 1st calf (Sally) July 8, 1877; 2d, May 7, 1878; 3d, March 4, 1879. Three heifer calves in 19 months and 26 days—and she only 3 years, 1 month, and 3

Fig. 3.—THE BROOM FINISHED.

days old...."Annie," July 9, 1876; 1st calf (Susie), Dec. 25, 1877; 2d, Oct. 25, 1878; 3d, Oct. 8, 1879. Three heifer calves again...."Fanny," July 2, 1876; calved March 28, 1878, and May 20, 1879. This animal, bred in-and-in, having three-fourths of the blood of her sire, has not done so well...."Jennie," January 18, 1877, aborted at about 7 months, Sept. 23, 1878; 2d calf, Aug. 8, 1879. She is now as well developed in barrel and bag as a four-year-old...."Sally," July 8, 1877; calved Feb. 16, 1879. This made "Bessie" a *grandmother* at 3 years and 15 days...."Mary," Nov. 12, 1877; calved May 11, 1879...."Susie," Dec. 25, 1877; calved May 22, 1879—one month and 18 days before "Annie," *her* mother, was three years old...."Hannah," out of imported "Antic," sold to the Hon. John B. Packer, was only 14 months and 20 days old when she dropped "Fanny," and her half sister, "Lillie," was a mother at 14 months, 23 days. To recapitulate:

Nelly	was a mother at	14	months and	3	days.
Hannah	" "	14	"	20	"
Lillie	" "	14	"	23	"
Ruby	" "	15	"	1	"
Susie	" "	16	"	27	"
Bessie	" "	17	"	7	"
Annie	" "	17	"	16	"
Mary	" "	17	"	29	"
Sally	" "	19	"	8	"
Fanny	" "	20	"	26	"

Jennie had had a calf and seven-ninths when 2 years, 6 months, and 20 days old. None of these young animals raised by myself have thus far gone dry. They freshen up from 2 to 4 weeks before calving, and attain almost their full quantity. If any one asserts that this early breeding is hurtful, let him come and see for himself. Mr. Packer thought "Hannah" was *too big*, and if any one has a finer 3-year-old than "Bessie" and "Annie," or a bigger 2½-yearling than "Jennie," or more thrifty *milking calves* than "Mary" and "Susie," I will go far to see them. It is logical to believe that the sooner a cow or other animal can acquire a good habit, the better it will be for them. And surely it is a good habit for *cows* to drop valuable calves and give milk. If I can render mine, not merely self-supporting, but profitable, at 15 or 18 months, by keeping the right breed and feeding liberally, I am more fortunate than he who produces the same result in 30 or 36 months, by half-feeding. The half-feeding for the longer period will cost much more, both in money and labor, than the full feeding for the shorter time, and produce animals of less sym-

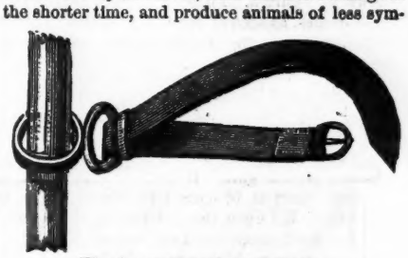


Fig. 1.—THE RING AND STRAP.

metry and vigor. As a rule, the finest *physical* specimens of dogs, hogs, cattle, horses, jackasses, and men, and not stunted in their development, are those that have never felt the pinchings of poverty.

Ring and Swivel Cattle Fastening.

Mr. D. S. Depue, Ionia, Mich., sends a method of fastening cattle, of his own devising, which he has used for a long time, and finds very satisfactory, preferring it to any other. The fastening consists of an iron ring, four inches in diameter, and about an inch in width, which slides readily upon an upright post. A swivel-ring turns in the large ring, being fastened to it by a swivel-point passing through a hole in one side of the large one, and headed down over a washer in the usual way. The small ring carries the strap, which, for strength and comfort, should be rather wide and of sufficient length to buckle around the animal's neck, and no more. In order to keep the strap in place, a piece of wire may be placed around the fold of the strap, near the ring, as shown in figure 1. When the fastening is not in use, it can be pushed up to the top of the post, and the strap passed over a peg in the timber overhead, as shown in figure 2.—"The swivel is the climax of all." Mr. D. is satisfied that his cattle, thus fastened, are comfortable, and safe, and the method is easy of application.

Fig. 2.—STRAP FASTENED UP.

Cattle Shelters on the Prairies

In the far western grazing regions, where natural protection of ravines, groves of timber, etc., is not

Fig. 2.—CATTLE SHELTER FOR THE PRAIRIE.

available, shelters of the kind shown in the annexed illustrations are provided. Poles are set in the ground in rows about 16 feet apart, and 12 feet in the rows. Cross-beams or poles are spiked to these to hold a frame of lighter poles, and others, placed sloping, are laid upon the north side as shown at figure 2. Piles of hay are heaped over these frames, as seen at figure 1, and these furnish at the same time, shelter from storms, and feed for the protected animals. A large number of these shelters are often made on the range, and some of them are hundreds of feet in length, and so curved as to protect from north-west and east winds. After a severe storm, the shelters are fixed up by packing more hay on the sloping poles, to furnish feed for the cattle when the next storm renders the shelters acceptable both for food and protection.

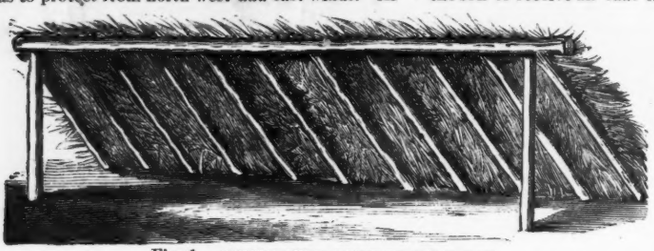
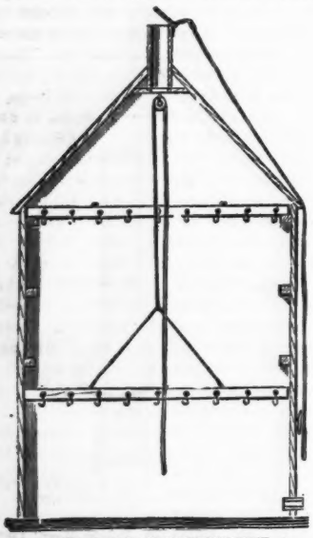


Fig. 1.—CATTLE SHED COVERED WITH HAY.

A Smoke-House Convenience.

A method of hanging the meat in a smoke house



A SMOKE-HOUSE CONVENIENCE.

without the necessity for reaching up, or using a ladder, is shown in the accompanying engraving. The smoke house may be of any shape, but it should be provided with cleats fixed to the sides, upon which the hanging-bars rest. A pulley is fitted inside to the top of the building, and a hoisting rope is passed over it. The hanging-bar is hooked to the rope and two spreading ties, as shown, so that it will not tip easily when it is loaded. The hams or bacon are hung upon hooks fixed in the hanging-bar, and the whole is hoisted up to the cleats, when the bar is swung around so that the ends rest upon the cleats; the rope is then released from the bar by means of a small rod, and another bar may be loaded and raised in the same way, and so on until the meat is all suspended.

Top-Dressing in Winter.

The practice of top-dressing grass land during the fall and winter months, is slowly increasing. The common apprehension, that much of the manure is wasted by running off while the ground is frozen, is giving place to better views. There never was much basis for this opinion. The same soft weather or rain that makes surface water, opens the soil to receive all that leaches away from the manure. The surface soil of dark mould, six inches or more in depth, has an easy task to take care of a heavy dressing of stable manure. If fifty loads were to be spread evenly over an acre, it would make less than a half inch in depth. The grass stubble, even upon a gentle slope, would hold the manure in place, in all ordinary rains and snows. Experiments show conclusively, that the fertilizing properties of the manure remain where it is spread. The change which our railroads and steamers have made in Eastern agriculture, is turning the attention of farmers more and more to top-dressing, as a means of keeping up the fertility of their meadows without plowing, and re-stocking the land. There is so much competition from the new states in grain and meats, that the eastern farmers can only raise them at a very small profit, or even loss. Grass pays better than almost any other crop. This he can turn into butter and milk for the village market, or into hay, which is too bulky to admit of transportation from the prairie states. The old rotation of corn two years, oats one year, and grass three years, hardly pays in the Eastern States. Labor is expensive, and it costs to plow, cultivate, and re-stock land. Grass and hay are paying crops, and if the meadows can be kept up to the production of two or three tons to the acre, by top-dressing with barn-yard manure, it is improved husbandry to adopt the change. It is demonstrated in a multitude of cases, that this can be done. We visited, recently, a farm on which were meadows, that had not been plowed since they were first cleared from the forest, some two hundred years ago. They were not far from the barn-yard, and produced the best hay upon the farm. Any falling off in the production, indicated the need of more top-dressing, which was faithfully applied. The season favors this mode of fertilizing, and there is economy in handling the manure but once. The teams are in their best condition during the fall and winter, the weather is cool, and much power is saved by drawing the loaded carts over the solid earth, or the sleds on the snow. Much labor is saved by spreading the manure from the cart tail, while drawing it upon the meadows. The great pressure which comes upon the farm hands and the teams in April and May, is forestalled by this winter work. About the best place for manure, as it comes from the stable or the compost heap, is the surface of the meadow. CONNECTICUT.

A Dumping Sled.

A sled for drawing manure, stone, or other coarse materials, from which the contents can be instantly

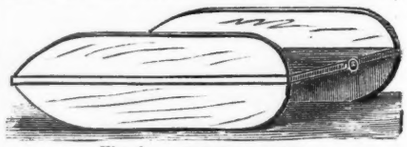


Fig. 1.—A DUMPING SLED.

dumped, such as is shown in the engravings, will often be found a very convenient farm vehicle. It consists of stout runners, upon which the plank deck is fastened, and a pair of inverted runners are fastened to the upper side (fig. 1.) These operate as side planks and runners at the same time. The sled is drawn by a stout chain and ring fixed to the front. A longer chain is fastened to the back of the sled, as shown in the engraving. The draft-chain is fastened to a snap-hook, which may be released by pulling the cord, as shown at figure 2. Then the dumping-chain comes into use, and tips the sled over, releasing the load. The ring is then attached

Fig. 2.—THE DUMPER LOADED.

to the draft-hook; the dumping chain, fixed as before, and the sled is ready for re-loading; this time upon the reversed side. It is in fact two sleds in one, and by rounding the runners, front and rear, it may be drawn equally well from either end.

How to Make a Snow Shovel.

Every house should be provided with a snow shovel, ready for use at times that always come unexpectedly. A broad wooden shovel will be of more

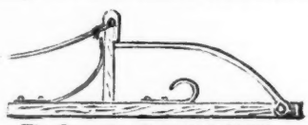


Fig. 3.—THE CHAIN FASTENING.

use in moving snow from paths and roads than a steel one, and it may be made very easily, as shown in the illustration. A broad piece of thin board is chosen, and a cross-cleat and braces are nailed to it. The handle is fitted, and the edge of the shovel is protected by a piece of sheet-iron or tin nailed over it. If the board is likely to split, a light cleat may be fastened across it on the underside with wrought nails, clinched to make them hold firmly. The engraving hardly requires explanation. There are but few farms upon which a snow plow will not pay for the trouble of making it at the first heavy fall of snow—to say nothing of the fun it affords the youngsters. After all the work of the plow is done, the "finishing touches" require the snow shovel.

A HANDY SNOW SHOVEL.

Double White-Flowered Horse Chestnut.

BY W. C. BARRY, MT. HOPE NURSERIES, ROCHESTER, N. Y.

Although the Double-flowered Horse Chestnut was introduced to this country in 1852, this superb variety has not acquired that popularity which its merits warrant. It is surprising that so important an addition to our hardy flowering trees should not have met with greater favor, and I can only account for this lack of appreciation by the fact that its many good qualities have not been understood. It was figured and described the first time in America, in the "Genesee Farmer" for 1852. Since that time it has been propagated and disseminated in but limited numbers, and, as yet, fine specimen trees are seldom seen. The first imported tree, obtained from the late Mr. Rivers, is now growing on the grounds of Ellwanger & Barry, at Rochester, and is about 60 feet high, its branches covering a circle 20 feet in diameter. It is as hardy as the common Horse Chestnut, of vigorous, erect growth, regular pyramidal outline, with rich, dense foliage and splendid inflorescence. Few trees can lay claim to a greater combination of attractive features, and it possesses several characteristics which render it even more desirable for ornamental planting than the ordinary form. In habit it is more upright and formal, its hight being about three times its breadth, and a fully developed specimen is a perfect pyramid of verdure. Its flowers, as seen in the engraving, which is one-fifth the real size, are perfectly double, and in spikes larger than those of the single flowering kind, resembling gigantic hyacinth bouquets. They appear in remarkable profusion at the season of bloom, which is about two weeks later than that of the common kind. On the lawn this tree forms a conspicuous and pleasing object, and although I have never seen it used as a street tree, I think it admirably adapted to the purpose. It produces no fruit, a characteristic which many will regard as an important point in its favor, as much litter is avoided. A proper consideration of the merits of this fine tree will induce amateurs and planters to employ it oftener in the ornamentation of public and private grounds.

THE DOUBLE WHITE-FLOWERED HORSE CHESTNUT.

Dyehouse Cherry.—As we first brought this fruit to notice, it is gratifying to hear good accounts of it from all quarters. "R. J. B.," Fairfield Co., O., writes. "The freedom of this excellent fruit from insect depredations, is almost as much a marvel, as its great hardiness. Usually the fruits which "the worms" pass by, are not of a high grade, the Damson plum for example. But here is a fruit which yields to none of its compeers; and the concurrent testimony is, that year after year, it remains unhurt by insects, as well as by cold. An explanation of this is ventured with some diffidence. Most of the insect pests prefer seclusion for their work. Fruits borne in clusters, and touching each other afford them privacy. Rawle's Janet is a familiar example. This good apple sets its fruit in clusters of two, three, and four, and it is found profitable to thin it to one on a spur, not only for the increased size of the remaining apples, but to get rid of the insect injuries which otherwise render the crop of but little value. Now, with the Dyehouse, the leaves are but moderately plentiful, and the fruits stand out, each by itself, often in full sunshine, so that the green of the leaves is obscured by the brilliant red of the ripe cherries; and the little marauder, failing to find a quiet nook, takes his leave."

THE HONEY LOCUST (*Gleditschia triacanthos*).

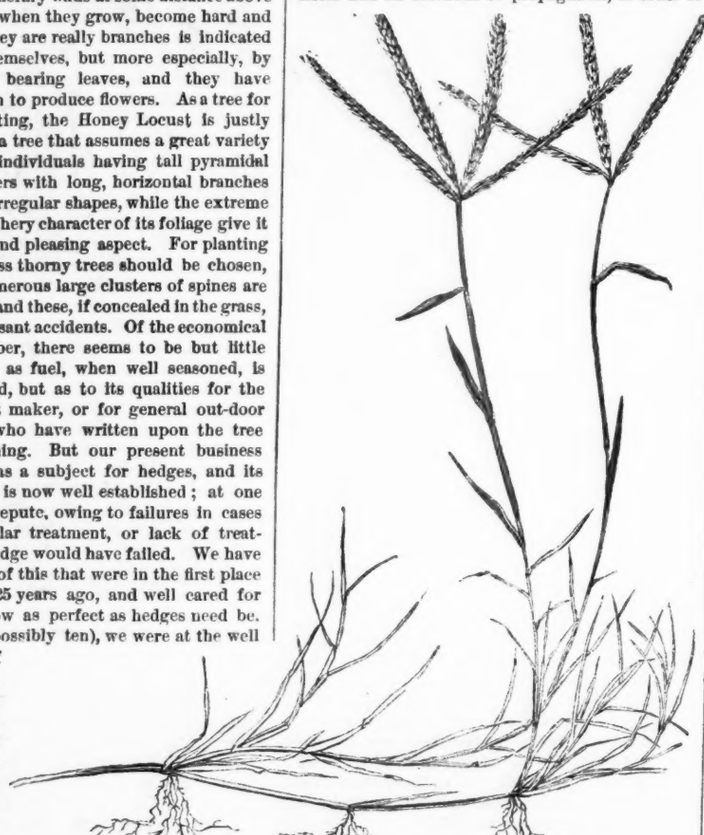
The Honey Locust as a Hedge Plant.

In localities where it will endure the winter unharmed, there is probably no plant so serviceable for hedges as the Osage Orange. But besides a northern area in which we know that this is not hardy, there is a broad belt in which its hardiness is doubtful, it varying with local influences. From both these districts, and especially that of the uncertain hardiness of the Osage Orange, there come frequent inquiries for some hedge plant which shall be as serviceable as that, and perfectly hardy. We know of no other so well meeting these conditions as the Honey Locust. Before considering its value as a hedge plant, it will be well to describe the Honey Locust, as we have found that it is very frequently confounded with the Common Locust; the fact that this is often called the "Sweet Locust" greatly aids in confounding the two. The Honey Locust is a native of the Middle, Western, and South-western States, it being more common west than east of the Alleghanies. Along the banks of the rivers it often reaches 80 and 100 feet in hight, with a trunk three and four feet in diameter. The broad head is remarkable for its lightness and grace, though it makes but little shade, owing to the fineness of the foliage. As the peculiar form of the leaves distinguishes it from nearly all other native trees, and especially from the Common Locust, we give in the engraving a small twig with several leaves. These are what botanists term *twice-pinnate;* simply *pinnate* leaves are very common. The Sumachs, the Ailanthus, the Common Locust, and many others, affording examples. In the pinnate leaf, there is a leaf-stalk, or common petiole, along the sides of which are arranged pairs of small leaves, or *leaflets*, with or without a terminal or odd one. In the twice-pinnate (*bipinnate*) leaf, the leaflets themselves are compound, the common, or main leaf-stalk, instead of leaflets, has smaller leaf stalks, which themselves bear leaflets. A reference to the engraving will show this. This difference in the foliage will usually allow the Common Locust and the Honey Locust to be distinguished at once; in the one case the leaves are simply pinnate, and in the other doubly, or twice-pinnate; though it sometimes happens that the Honey Locust bears some once-pinnate leaves, this is not the rule. The difference in the flowers is equally striking; the Locust proper has long hanging clusters of large, white, pea-shaped flowers, which are noticeable for their fragrance, and are very showy. The Honey Locust, on the other hand, has flowers so small and inconspicuous that only those who observe closely ever notice them at all. They have not the pea-shape of the flowers in most of the family (*Leguminosæ*) but are regular, in small spikes, which, being greenish, are likely to escape notice. The flowers are of the kind called *polygamous, i.e.*, there are staminate, pistillate, and perfect flowers, either in the same tree, or on different trees. On trees where the flowers are all staminate, as in figure 1 in the engraving, there will, of course, be no fruit. Nor will there be on trees with all pistillate flowers like 2, unless there are other trees with stamens near by to fertilize them; while trees with the perfect flowers (3 in the engraving) will produce fruit. In this tree the fruit is a much flattened pod, an inch, or more, wide, and 10 to 20 inches long. These are often curved and twisted, and very conspicuous upon the tree; Dr. Gray once aptly described the appearance of the tree in fruit by likening it to a tree hung with apple parings! The intervals in the pod between the seeds are filled with a sweet pulp, on account

of which the pods are eaten by many animals; boys try to "make believe" that it is good, but they soon tire of its mawkishness. An infusion of the pulp has sometimes been used for making a domestic beer. But the most noticeable feature of the tree, and the one in which its hedging value resides, is its thorns. The thorn often being triple, *i. e.*, a main thorn with two branches, has given the tree one of its common names—"Three-Thorned Acacia," its foliage having a close resemblance to that of the Acacias; but there is no regularity in the shape of the thorns, they being found in great variety, from a mere simple point to very much branched and complicated masses, armed in every direction. Different trees vary greatly in their armament, some being quite thornless, while others, according to Bryant, "bristle with thorns to such a degree, that not even a squirrel can ascend them." These thorns are really branches developed as spines; the tree produces, besides buds at the axils of the leaves, supernumerary buds at some distance above the axil; these, when they grow, become hard and pointed; that they are really branches is indicated by branching themselves, but more especially, by their sometimes bearing leaves, and they have even been known to produce flowers. As a tree for ornamental planting, the Honey Locust is justly esteemed; it is a tree that assumes a great variety of forms, some individuals having tall pyramidal heads, while others with long, horizontal branches assume flat and irregular shapes, while the extreme lightness and feathery character of its foliage give it a most graceful and pleasing aspect. For planting in grounds the less thorny trees should be chosen, as those with numerous large clusters of spines are apt to drop them, and these, if concealed in the grass, may cause unpleasant accidents. Of the economical value of the timber, there seems to be but little known; its value as fuel, when well seasoned, is generally admitted, but as to its qualities for the builder or cabinet maker, or for general out-door farm uses, those who have written upon the tree say little or nothing. But our present business with the tree is as a subject for hedges, and its value for this use is now well established; at one time it was in disrepute, owing to failures in cases where, under similar treatment, or lack of treatment, any other hedge would have failed. We have examined hedges of this that were in the first place properly planted 25 years ago, and well cared for since, that are now as perfect as hedges need be. Some years ago (possibly ten), we were at the well known nursery of Ellwanger & Barry; they had recently finished planting a long line of Honey Locust hedge upon their grounds. Having seen, as it were, the very beginning of this hedge, we have watched its progress with interest in subsequent visits to Rochester; not having time when there last summer to visit the hedge (at some distance from the attractive portion of the grounds), we have since written to learn its present condition, and the esteem in which it is held after an experience of several years. After giving answer to some questions in detail (which we shall use at another time), Mr. Barry writes: "Some neighboring farmers here have fine Honey Locust hedges on their farms, and they have never received more than ordinary care. For our climate it is the best hedge plant that I know of." After this nothing more need be said in regard to its excellence. Having given so much space to describing the plant, the method of making a hedge must be left for another month. We may here say, to answer a number of inquiries, that the plant is always raised from seeds planted in spring; these may be had of the leading seedsmen, the catalogue price being 60 cents a pound. Young trees are offered by several nurserymen, the usual price being $8 to $10 the thousand, according to size. We mention these points to save a large number the trouble of writing for the information.

About Bermuda-Grass.

Bermuda-Grass, or Scutch-Grass in our Southern States, Creeping Dog's-tooth-Grass in England, Chiendent in France, and Doob or Durva in the East Indies, are different common names for the grass called by botanists *Cynadon Dactylon*. In one respect it is the most remarkable grass within our knowledge, as one can with equal ease find that it is the most valuable of all grasses, and one that is to restore worn-out Southern fields, and bring untold blessings wherever introduced, or that on the other hand that it is a curse to the soil, and that when this once gets a footing upon a farm, the owner may as well give it up at once, as to do so at the end of a struggle in which he is sure to be worsted. With such widely differing views, it is likely that there is some truth on both sides; but it is not to our purpose at present to discuss the value of Bermuda so much as to describe the grass itself and its methods of propagation, in order to



BERMUDA GRASS (*Cynadon Dactylon*).

reply to many inquirers, who wish to make a trial of it. No doubt these have come to the conclusion that if half that has been said in its favor is true, they will run the risk of all the alleged bad qualities that have been ascribed to it. Bermuda-Grass has slender creeping stems which run along upon the ground, throwing clusters of roots into the soil at every joint, frequently branching, to form a net-work of such stems from which arise annually the erect and leaf-bearing stems. These prostrate stems run to a great distance; one writer states that they will pass over a rock six feet across, and soon hide it from view. The upright stems vary greatly with the quality of the soil; sometimes they are but a few inches high, forming a dense mat, and again growing tall enough to make two tons of hay to the acre at one cutting. The difference of appearance in the grass as it grows on dry and sandy soil, and in a moist and rich one, is so great that some botanists have thought that they might be well marked varieties if not distinct species. The flowers are borne upon slender *spikes* one to two inches long, three to five of which are attached at the top of the stem, from which they spread like rays, as in the engraving, taken from a small specimen. The structure of the *spikelets*, or the flowers themselves, we need not describe, as it can only be done by the use of terms familiar to only those who have made a special study of the grasses. While the Bermuda-Grass flowers freely, it has not, so far as we are aware, produced seed in this country. In reply to many who have inquired where seed could be procured, we have had occasion to state a number of times, that no seed was produced; this has called out letters from several who thought we were in error, and upon our requesting the writers to send us specimens, they have in nearly every case sent the seed of the Crab-Grass (*Panicum sanguinale*). That is, an annual, readily told from Bermuda-Grass by botanical characters, and can be known to the general observer by its much longer spikes which are usually in greater number (4 to 15) than in Bermuda. The few who did not send Crab-Grass seed, mistook the flowers of Bermuda for its seeds. But does it never bear seeds? Undoubtedly it is fruitful in some countries, indeed, Sinclair in the account of his experiments made for the Duke of Bedford and published in 1816, says: "The seeds of this highly celebrated grass in India, were communicated to the Duke of Bedford, from the East Indies, by the Marquess of Hastings." It is further stated, that the plants from these seeds produced seeds. This grass is found in all hot countries, but is thought to have been introduced here and into Australia, which could hardly have happened, save by the aid of seeds. Its wide dispersion with us, being found in Pennsylvania, and every State south of it, makes it probable that it has at times seeded, but in the hundreds of specimens we have examined, no seed, or even an imperfect one, has been found. In view of the inquiries we have had, we should think that some of our seedsmen would find it worth while to import seed from abroad. The only method by which it can now be propagated, is by cuttings. The sod is taken up and thoroughly washed; it is then run through a cutting machine, and cut fine; the cuttings (or rather choppings), are sown broad-cast, and a shallow furrow turned over them as in plowing in wheat. This method is suggested by Mr. Howard, in his useful treatise on "Grasses for the South;" we regret that he does not state what quantity of cuttings of this kind is needed for an acre. It would be well for some seedsman, where the grass is abundant, to advertise the fact that he can supply it in sods or cuttings. The grass increases very rapidly, and if those who wish to introduce it, can get by mail a small bunch of roots from some friend who lives where it grows, they can, by growing this carefully one year, get enough to set a wide area the following spring. The value of the Bermuda as a pasture grass, is more obvious than as a meadow grass. Yet when our late friend, Mr. Affleck, of Texas, states that his regular crop was five tons of hay to the acre, and one so favorably known as Doct. Ravenel, of S. Carolina, states that by the use of fertilizers, he harvested in four cuttings, from one-eighth of an acre, at the rate of *ten* tons to the acre, we should think that the Southern States by growing this grass would be exporters of hay.

The Apple Leaf Fungus.

BY PROF. WM. A. BUCKOUT, PENN. STATE AGR. COLLEGE.

Professor Buckhout sends us some sketches of the Apple Leaf Fungus upon the fruit, with the following interesting notes: "In your article on the Apple Leaf Fungus in the November number, I find no mention of the fact that besides attacking the leaves, and thereby injuring the fruit-producing power of the tree, it attacks the fruit itself, as is known to be the case in certain wild species—the Hawthorn, for instance. An excellent example of this has recently come under my notice, and, as I am not aware that such a case has been recorded in print, I send you the details. Mr. Washington Campbell, of Linden Hall (Centre Co., Pa.), brought me the leaves and fruit of the apple locally known as the 'Pound' (Fallawater of Downing), upon both of which the "cluster-cups" were thickly scattered. Those upon the fruit were in patches about the size of a small coin, and most frequently found

about the eye. Sometimes, however, they were upon the side, and unconnected with either the eye or stem extremity. Figure 1 gives the appearance

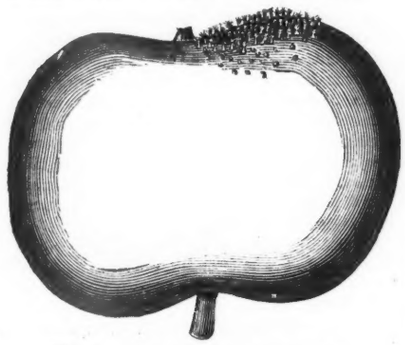


Fig. 1.—APPLE AFFECTED BY FUNGUS.

of one of the apples, and in figure 2 is shown the effect which was produced upon the interior of another. The flesh of the apple was somewhat discolored in places, and rather hard and knotty in lines running to the core. The fruit was thus un-

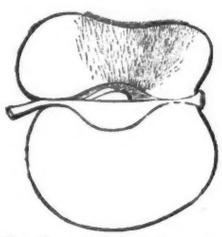


Fig. 2.—SECTION OF APPLE.

Fig. 3.

fitted for use, and when attacked became stunted and one-sided in its growth. Mr. Campbell's apple crop was very materially diminished by this means. Many of the 'cluster-cups' upon the fruit were longer and larger than those upon the leaves. This was very distinct to the unaided eye. In figure 3 I have sketched several of them enlarged. They are long, curving, and horn-like. Their recurved borders often fail to separate into the characteristic thread-like parts which are so distinct a mark of the shorter cups. A second point of great interest to fruit-growers is the connection of the 'cedar-apples' with these 'cluster-cups'—a point to which you refer by an example. I am glad to be able to add another, which is so conclusive that in my own mind there is no longer any doubt of the specific identity of the two forms which are apparently so different in their nature. The trees from which the specimens were taken were rather closely set, young and thrifty. Two red cedars were growing very near them. One was small, and upon it were found a half-dozen of 'cedar apples;' the other was a moderate sized tree, upon which were very many. Upon the apple trees nearest the cedars *scarcely an apple or a leaf* escaped infection. A few rods off was an older orchard, separated by a narrow roadway: only an occasional apple upon these trees showed the fungus. It appears as if the Pound apple was more susceptible to attack than other kinds; for one or two of other varieties, and apparently equally exposed, showed less of infested fruit. The case seems to be worthy of being placed on record, and to offer practical proof of the relationship of the two very unlike fungi—a point upon which botanists have long disagreed."

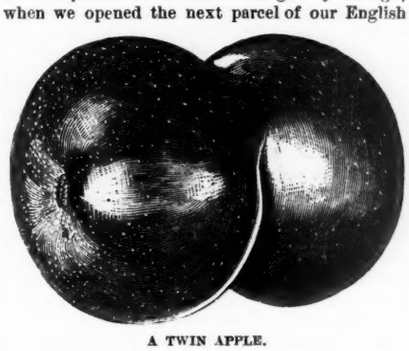
Rapid Tree Planting in Kansas.

[Professor Sargent, Director of the Arboretum at Harvard University, favors us with an extract from a letter written by Mr. Robert Douglas, the noted forest-tree grower, of Waukegan, Illinois. Mr. Douglas has recently completed a plantation of trees of the new hardy Catalpa (*Catalpa speciosa*), for one of the railroads of Eastern Kansas, and his method of planting, the result of years of practice and experience, will be of service to other prairie tree-planters, or indeed to any one elsewhere planting seedling forest trees on a large scale.—ED.]

"I wish you could have seen those raw men after we had worked them a few days. They boasted about planting 300 trees per man when they worked there last spring. When I told them that, after two days, I would make them average 1,500 trees per man, you should have seen the look they gave me. But they did it the second day, and kept it up to the end. The trees were as well planted as they possibly could be, the roots being carefully spread out by the fingers, and every tree planted firmly. Every one of those 18 or 24 men, averaging 10 hours per day, planted two and a half trees for every minute of that time! As this mode of planting is my own, arrived at after some study and experience, and reduced to the very fewest motions that can be used in planting a tree, or, rather, a plantation of trees, I trust that a description of the operation may be of interest. We call this the 'three-motion system' of planting. The land is marked off 4 by 4 feet, with a corn marker. The men are in 'gangs' of three each, two with spades and the other with 100 trees tied up neatly in a parcel with a willow. The spaders stand facing each other, taking each a row, the tree holder standing between them. The spader makes a downward stroke with the back of the spade facing outwards, and then takes out a spadeful of earth. This leaves a straight side on the back of the hole, against which No. 3 places the tree; the digger then replaces the spadeful of earth, having made just 3 motions of the spade. The tree holder takes a tree from his bundle, and with a quick motion, which is hard to describe, but easy to learn, places the tree in the hole in such a manner as to spread out the roots perfectly. In this way he tends two men, putting in the trees just as the spader raises the earth. As the spader steps forward to the next check made by the marker, he brings down the heel of his left foot close to the just planted tree, and this leaves it firmly tightened in the soil, and ready to grow."

Twin Apples.

In a "Basket Item" given last month on page 7, we mentioned the receipt of twin Lady apples from Mr. W. W. Young, of Ky. Thinking afterwards that the occurrence of such a union of apples was of sufficient interest to put on record with an engraving, we gave one of the specimens to an artist for the picture to be made. Singularly enough, when we opened the next parcel of our English



A TWIN APPLE.

papers, there in the "Journal of Horticulture" was, to all intents and purposes, our twin apple. The account of this English twin is of special interest, as it informs us that the tree which bore it has a regular habit of producing twins, and that it has been propagated. The apple is not, like ours, of a known variety, but is probably a chance seedling. Mr. Young stated, in sending the twin Lady apple, that he found a number of twins every year. We would suggest that he examine the coming season to ascertain if they do not all come from the same tree. Of course this growing together of apples is only of scientific interest; to the orchardist, other than a few specimens as curiosities, the habit of doubling the apples (instead of the crop) would be a disadvantage. It is useful for him to know that the peculiarity may be propagated, in order that such trees may be avoided in cutting cions.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Household Decorative Art.*

BY M. G. E.

The design for a Bracket in fret-work, here given in fig. 1, is to be worked up with a chisel and vein-

Fig. 1.—DESIGN FOR BRACKET.

ing tool. The shelf, shown in figure 2, is supported by a piece of carved wood, precisely like one-half of the lower part of the back, to which it must be firmly attached by means of small screws let in from behind. The wood should be ¾-inch oak or walnut. In drawing outlines for carving, chalk is better than pencil, as it is more readily erased, unless the pattern is delicate, as for fret-work, when a pencil line will be more easily followed. If the ornament is to be in high relief, draw the pattern boldly on the upper surface, and mark off by a line on the sides, the distance to which the first flower or leaf of the group is to be cut down. For straight lines, use the chisel, holding it upon the line, firmly in the left hand, and strike it a light blow with the mallet in the right; do not cut too deeply at once. A heavy blow is likely to break the fibre, and the piece that was intended to be left in relief will be weakened, and probably break off with a little handling. For curved lines use the gouges; if you have several sizes, one will be found to fit each curve; be careful to cut straight down, and do not let the tool slope; work slowly and carefully until the whole design is outlined. Then, with your chisels, clean away the back-ground, leaving the ornament in as high relief as desired; now sketch in the remaining leaves, treating them in the same way, clean out carefully underneath, and the work is now blocked out. Much patient labor is next wanted to perfect what is now but just begun. The veining of the leaves, the curving of the flowers, the rounding of the stems, and all the delicate tracery required must be accomplished by

Fig. 2.—THE SHELF.

the aid of the small chisel, gouges, veining, and parting tools. Cut cleanly and with thought; avoid the use of sand-paper if possible, design

* This was prepared and intended to follow an article given in June last, but was crowded out for the time.

carefully, and execute patiently, and as the work develops, you will very soon be proud of the result.

Figure 3 illustrates a hanging book-case, in the old English style, which must be strongly put together to bear the weight of books. While endeavoring to secure the ornamental, the useful should not be lost sight of. To the educated eye, there is nothing more distressing than the flimsy articles of furniture, with which some houses are filled, glittering with gilt or varnish, too delicate for use, and possessed of no artistic value to make their uselessness pardonable. Work need not be clumsy to be strong, and an elegance of appearance is only gained by just proportion and neatness of

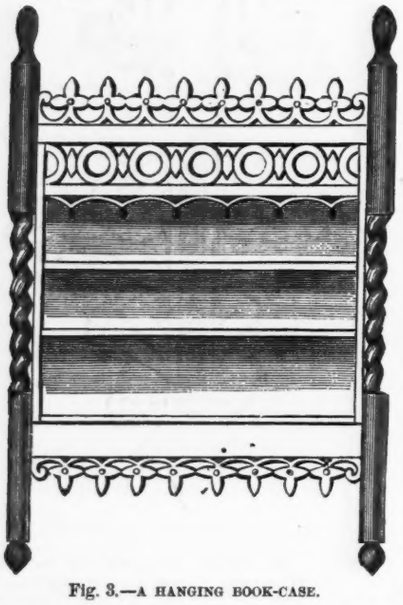
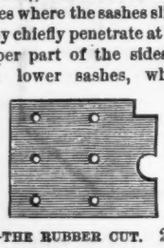


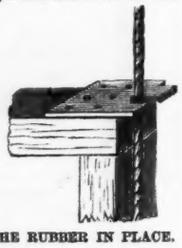
Fig. 3.—A HANGING BOOK-CASE.

finish. For making these shelves, oak will be perhaps handsomest, if not less than half inch. If a turner is convenient, the twisted shafts can be furnished at trifling expense, but as some are not so situated as to be able to call upon one, I will give the simplest directions for producing the same effect. From a square stick cut off the corners from that part which is to be twisted, and plane smoothly, so as to bring to an octagonal shape, repeat this until it is sixteen-sided, this, when the sharp edges are smoothed down a little, will be nearly enough round for the purpose. Now take two strips of paper, each of half the diameter of the wood, that is, supposing the latter to be two inches thick, each strip of paper should be one inch wide. Twist them spirally round the wood, side by side, and secure them at every turn by using pins. Having done this, paste one of them securely to the wood, then remove the other altogether. The wood left exposed must be cut away with a gouge to a depth of one-half in the center, and one-quarter its width at the outsides. Then smooth down and round off with the chisel; last of all using the sand-paper.

Protection for Windows.

"When the wintry winds do blow," and with a piercing whistle rush through the windows at the sides where the sashes slide, they chiefly penetrate at the upper part of the sides of the lower sashes, where





1.—THE RUBBER CUT. 2.—THE RUBBER IN PLACE.

they almost invariably fit so loosely as to rattle continuously. To prevent both the rattling and the entrance of the cold wind, the writer hit upon the following method: Some sheet rubber was cut into the shape shown at figure 1. These pieces fit upon the upper corners of the lower sash, the sash cord passing through the half-round hole, and the sash strip passing through the square hole at the corner. The piece of rubber is tacked upon the corner of the sash, as shown in figure 2, and should be made to fit closely to the side of the frame to keep out the wind.

Household Notes and Queries.

TAKING COLD.—One of the many ways of taking cold, is by not keeping the mouth shut when out in the sharp, cold air. The tender membranes of the throat are exposed to the chilling air, and congestion ensues, in other words, the person takes cold. The cold air should be taken in through the nostrils. Man, like the lower animals, should breathe through his nose.

DANGEROUS LIQUIDS.—*Ammonia*, especially the stronger kinds, is dangerous, a few drops being enough to injure a person. When used for cleansing purposes it should be handled with great care, that the gas, which is given off freely in a warm room, be not breathed in large quantities, and do injury to the delicate lining of the nose and mouth. *Benzine* is a liquid, in the handling of which much caution should be exercised. It is very volatile, and its vapor, as well as the liquid itself, inflammable. When employed for removing grease, or other stains, from clothing, gloves, etc., it should *never be used at night*, nor at any other time near a fire. *Ether* is another dangerous liquid, and in other than the physician's hands it had best not be employed in the household. *Alcohol* must also be used with great care, especially at night.

CLEAN THE CISTERN.—Rain water, though very pure as it falls from the clouds, takes with it more or less impurity from the roof upon which it is caught and the pipes through which it passes to the cistern. There is a constant inlet for impurities, but no outlet, and these falling to the bottom accumulate to such an extent, that the water in time becomes tainted, and sometimes decidedly unhealthful. When the water is low, a cistern should be cleaned, and this, at least, as often as once in a year.

CARE OF ASHES.—In the disposition of ashes, at least two points should be kept in mind, *safety* and *cleanliness*. If the ashes is from wood, no sifting is necessary. They should, if possible, be removed from the stove only when cold, that no live coals may be in them. In case this can not be done, great care should be taken that no fire is dropped on the floor, and in all cases a deep iron pail should be used; with a closely fitting cover. Wood ashes should *never* be put in a barrel, or in any other wooden receptacle, the number of destructive fires that have resulted from a disregard of this caution is a fearful warning. Even when no fire is visible, there is still danger. The length of time for which a fragment of live coal, no larger than a pea, will keep alive, when covered with warm, light ashes, is something astonishing; it has been known to last thus for days. A pit of stone or brick, and fire-proof, should be provided for keeping ashes in a convenient, secluded place a short distance from the house. With these precautions there is little or no danger of these fires which, when left unheeded, are not rare in town and country. Besides, ashes are worth 25 cents a bushel, and are far too valuable to be thrown away. Coal ashes, though not so valuable, should be properly provided for, on the ground of neatness, if for no other reason. Nothing is more distressing than to see, as is too often the case, a pan of coal ashes in one place and a box, or barrel, running over in another. These will be sown broadcast by the winds on the snow or ground, to be tracked into the house at every step. Coal, that is, hard coal, is rarely burned so completely that it will not pay to sift the ashes to save the unburned coal contained in them. When the clinkers are picked out of the sifted portion it is quite as valuable as fresh coal. There are various sifters, which allow the sifting to be done without dust, and if the ashes are sifted daily, the task is easy. Coal ashes are of almost no value as manure, but they are useful on heavy soils, just as sand would be, to lighten them; they make excellent paths and roads when mixed with earth, while for the earth-closet they are as useful as dried earth.

REMOVING GLASS STOPPERS.—What is more obstinate and provoking than a stopper that does not yield to the ordinary method of removal by the thumb and finger! If the fastening is due to the contraction of the neck around the stopper, it may be removed by heating the neck to expand it. The method of heating the neck of the bottle over a lamp may be dangerous, except in skillful hands. The same end may be gained—the expansion of the neck by heat—by passing a strong cord over or around the neck and moving the bottle rapidly along the string. One end of the string may be tied to a door knob, or other convenient object. The stopper is often cemented fast by the evaporation of a minute portion of the contents of the bottle. If it contain a syrup, for example, in pouring out a portion of it the neck, or a part of it, becomes wetted with the syrup; if the stopper be at once replaced there will be a thin film of syrup between that and the neck; upon standing awhile the water from this film of syrup evaporates, leaving the stopper cemented in with sugar. If the bottle holds a tincture, that will similarly answer to hold the stopper. In such cases the cement must be dissolved out. Such bottles have a lip to facilitate the pouring, and this forms a groove or channel around the stopper; by placing in this groove a little water, for syrup, or alcohol if a tincture, these will soon dissolve the cementing material, and the stopper may then be removed with ease.

A COVER FOR A BARREL.—When a barrel of flour or sugar is opened, the head should be taken out carefully, and the three parts hinged together, by means of strong linen, glued on the sides, but not the edges of the pieces, or strips of leather, nailed on as shown at figures 1 and 2. The cover is fixed

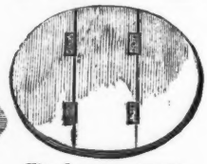


Fig. 1.—THE BARREL. Fig. 2.—THE COVER.

to the head of the barrel, by tacking one of the end pieces of the cover, to the chine of the barrel, and the other parts rest as they are laid down. This makes a good cover for barrels in the house, and also those used in the barns.

HANGING UP COATS.—A heavy garment, like an overcoat, if hung by the loop at the back of the collar, will soon stretch out of shape by its own weight. To avoid this, various devices have been made, some of wire, and others of wood. A piece of hard-wood, long enough to reach from the outside of one sleeve to that of the other, will answer the purpose; it should have a hole bored through the center, or a loop of strong cord to hang it by upon the nail or hook. Under-coats and vests may be hung in the same way. For the "best suit" this little matter is of considerable importance to all who desire their coats to not be full in the back of the neck, and therefore, out of shape.

EATING SNOW.—The practice, so common among school children, of devouring large quantities of snow and ice during the winter months, is to be discouraged. The blood vessels and nerves of the mouth and throat are chilled, often producing congestion, followed by cold in the head, and afterwards by more serious and deeper-seated troubles. A little piece now and then may not be objectionable, but the wholesale use of ice is decidedly so. Some school children seem to regard it as an article of diet, and as if it was the only thing to eat.

GINGER COOKIES.—1 cup Water, 2 cups Molasses, 1½ cup Lard, 1 tablespoonful Soda, 2 do. Ginger. A pinch of Alum, to be dissolved in the water. Flour enough to roll out soft; bake quick.

Soldering Liquid.

In soldering tin-ware, especially in mending old ware, the use of Soldering Liquids will greatly help. There are several of these, the best is made as follows: Get any convenient vial about half full of muriatic acid; procure at the tin shop some scraps of sheet zinc; if you have no strong shears, let the tinsmith cut the zinc into strips narrow enough to enter the vial. Place the vial out-doors, or under a shed, and add a strip or two of zinc. A great bubbling or boiling will take place as the zinc dissolves; as one piece of zinc dissolves, add another, and when a piece remains without any action, or bubbling of the liquid, it is done. Fit to the lower end of the cork a piece of stick to reach into the liquid; after the liquid is perfectly quiet, cork it. In soldering, wet the place where the solder is to go, with this liquid; the drop or two that the stick will take up is enough. Do not get this liquid on the clothing, or on the skin, as it may irritate it and make it feel very rough.

A Hanging Housewife.

To find a pin, *just when it is wanted*—and who cares for one at any other time?—is a small, but often a very valuable bit of information—and so with a long list of such other useful things, which are too frequently out of reach when wanted. A hanging "housewife," has some advantage over the ordinary work basket. It has a place; it can not be readily upset by a playful pussy, or dog, or roguish children, and it is more capable of being made an ornament to the room. It should supplement rather than replace the basket. The accompanying engravings, suggest a "housewife," that may be made at no considerable outlay for the materials, and is neat and handy. Its construction is simple, but in this matter, individual taste may be exercised, and as many pockets, etc., can be put in as desired. Some heavy cloth is selected as the back or framework, and this is bordered with fringes, and ornamented with initials, and other needle-work, tassels, ribbons, etc. Figure 1 shows the affair as complete, and hanging upon its hook, and an interior view is given in the second engraving. The fact that it folds up—or down rather—is important, both as regards beauty and cleanliness. The upper half, as it falls down, gives a neat and finished appearance, and at the same time shuts out the dust, which would otherwise collect in the folds.

Fig. 1.—THE "HOUSEWIFE."

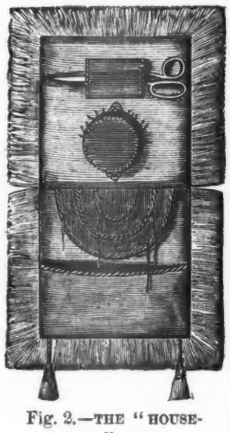


Fig. 2.—THE "HOUSEWIFE" OPEN.

Hard and Soft Water.

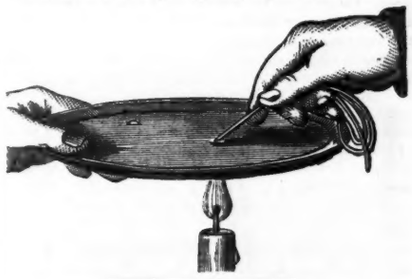
Several correspondents write that their well water is "too hard for drinking," and inquire how it can be made soft. In a general way, waters are of three kinds; soft, hard, and mineral. If the water will mix readily with soap, without curdling, it is called soft. If, when mixed with soap, there are small white curdy particles floating in it, and when used for washing this curdy matter sticks to the hands, it is said to be hard. When matters dissolved from the soil are in such quantity as to give a marked taste to the water, it is then a mineral water. The "hardness" of water is due to the presence of a very small quantity of mineral matter, most generally lime in some form. Soap is a Stearate of Soda, the Stearic Acid (an acid of fats) in combination with Soda. When this comes in contact with some Salt of Lime, the Stearic Acid, having a stronger attraction for Lime than it has for Soda, leaves that and unites with it, forming a Stearate of Lime, or Lime Soap. This, unlike Soda Soap, is not soluble in water, but when formed, it sticks to the hands, or to the fabrics washed, giving both a harsh hard feeling that is most disagreeable. This is in brief the science of the matter. All soaps are not Stearates, but some contain Oleic Acid in place of Stearic, hence are Oleates, and soft soaps have Potash instead of Soda, but in these cases, the action is the same as stated. The Lime in hard water is present in the form of the Sulphate (Gypsum), or the Carbonate of Lime (Limestone). But in the case of Carbonate of Lime, that is soluble only by the presence of Carbonic Acid in the water. When a very hard water is boiled and allowed to cool, a large share of the Lime leaves the water, and will in time settle to the bottom of the vessel. This happens to some extent if the Lime is in the form of Sulphate, because that is less soluble in boiling than in cold water; in the case of the Carbonate of Lime, the heat drives off the Carbonic Acid which held it in solution, and nearly all of that is deposited. If the excessive hardness of the water from our correspondents' wells is due to the Carbonate of Lime, boiling, before using, would remedy the difficulty, but this would not answer in case the trouble is due to the Sulphate, as only a portion of that would be deposited, and there is not, so far as we are aware, a practical remedy that will leave the water fit for use. The better way will be to make use of filtered rain-water; our back volumes give a number of filters, either separate, or attached to cisterns. At first, those who have been accustomed to hard water, do not like filtered rain-water, finding it flat and tasteless, but in some cases under our observation, the persons after a while preferred it to any other water. Those who live in the country, especially, can by a little painstaking, have rain-water in a state of great purity. The roof water-pipes and cistern should be kept clean, and by the use of a filter, as an extra protection, the best of drinking water may be thus enjoyed. Even if the taste is less agreeable, it is better to make use of it than to risk the diseases that are apt to result from the continuous use of water highly charged with Lime.

Scrape the Feet!

Every careful house-keeper, with an eye to first causes, is much interested in the way feet—or rather feet-coverings—come in from out of doors. If boys did not have muddy boots—the cares of the house would be much lessened. But boys are not the only ones that "bring in the dirt." Men-folk are often very forgetful of the amount of work they may make by not attending to the simple matter of cleaning their boots and shoes. Every door-step should be provided with a foot-scraper, and a brush or broom, and every one, as he comes in, should take the time to use them before appearing on the carpet, or clean floor. If a regular scraper—one made for the purpose—is not at hand, one can make one from a bit of hoop-iron, which is to be placed on a step or edge of the porch in a convenient place. It is well to provide a "mud-mat," which is simply strips an inch or so square—fence pickets will answer—screwed to three or four cross-pieces, an inch apart; or a more elaborate one can be made by stringing the slats upon fence wires, as shown in May, 1876. One, with muddy boots, is very apt to stamp and rub them on the steps or floor of the porch; a mud-mat will clean them more effectively, and save the porch hard wear. A very excellent mat may be made by boring holes in a board, and drawing corn-husks through the holes. Careful persons change their foot-gear when they enter the house to remain any length of time, a custom conducive not only to neatness, but so greatly to comfort, that it is to be commended.

A Very Convenient Solder,

to have always at hand in the house is often hawked at the fairs and elsewhere, and sold by itinerant peddlers on the street corners or from house to house. It is a very cheap article that should be kept on sale at the Family Supply Stores. It will pay a fair profit at 50 cents a pound. We see it frequently in the wholesale metal stores in the form of wire (about No. 15), weighing say an ounce to the yard. It might be mailed to any point in the country for five cents a yard, if a few yards went together in a coil, and it would be a great convenience to those remote from a tin-shop; while very often one can quickly stop a leak in a tin vessel in a minute or two, and thus save time and the trouble and expense of sending to a tin-shop at all.—*The mode of using* is shown in the illustration. The tin dish, pan, platter, boiler, or other article, is heated over a candle or lamp, or a coal from the stove, at the point of leakage, and the solder-wire rubbed over the hole until it melts, when, by a little dexterity soon acquired by practice, a drop of the solder will be left smoothly over the opening. Too much heat is to be avoided, and if some of the solder runs through it can be pared or filed off when cold. The only other point is to have the solder touch and adhere to the tinned surface all around the leak. If the tin is very rusty for some distance around the opening, the solder may be made to "take" to the rusting portion by touching it with a drop of the soldering fluid mentioned elsewhere.


METHOD OF SOLDERING.

An Ornamental Match Holder.

If all the different match-safes, and match-holders could be brought together, they would form a collection as varied as the different designs for cooking stoves, and washing machines. To the already numerous patterns, we add another, which may please those who like to make fancy articles, that shall be useful, as well as ornamental. The design is that of a suspended boat, and admits of a great variety, as the boat may be a miniature plain scow, a fanciful "shell," an Indian canoe, or something more elaborate. It is to be suspended by cords, plain or beaded, by ribbons, or otherwise. The boat may be made of wood, card-board, or even of tin: if of the latter, it may be covered with perforated card-board, upon which worsted patterns are worked. Whatever the material, it is intended that the exterior shall be ornamented, by small, bright-colored pictures, or in whatever manner fancy may suggest. At the bottom, or elsewhere, should be fixed a piece of emery paper, to furnish a place to scratch. The boat may have a partition amidships, providing two compartments, one for the unused matches, and the other for the burnt and useless. In some cases, a receptacle is made for the burnt matches, by suspending a second boat below the first, as seen in the above engraving.

A BOAT MATCH HOLDER.

BOYS & GIRLS' COLUMNS.

The Doctor's Talks.

Last month we were tr ing about Inertia, and it was there mentioned that a body set in motion can not stop of itself, any more than it can start of itself. That a marble set in motion by rolling on the floor would continue to roll, were it not stopped in part by the resistance offered by the air, and in part by that presented by the floor. Let us take, for illustration, besides a boy's marble, also a square block of marble, of the same weight, and the smooth table instead of the floor. You know, without trying it, that if you give both the ball and the block a push with the same hand, that the marble will roll quite across the long table, while the block will move but a few inches. If you think why this is, you will at once see that the block touches a very much larger part of the surface of the table than the ball, and that the rubbing of the two prevents it from going far. This obstacle to motion by the rubbing together of two surfaces

IS CALLED FRICTION,

a word that comes from the Latin word *fricare*, to rub. You know that the block will slide easier upon the smooth table than it will if there is a cloth upon the table, and more readily upon ice than upon the smooth table. In the case of the round marble, friction helps stop that, as you know that it will roll farther on the smooth table than on the table-cloth, and upon smooth ice much farther than on the table. There are then too kinds of friction, Sliding Friction and Rolling Friction. Suppose you try to push a long wooden box along the bare floor. If this box weighs 100 pounds, you will have to push against it with a force equal to about 50 pounds before you can start it. You think that by turning the box upon its smaller end, which will present less surface, you can move it easier. Try it. Not a pound easier will it move. The amount of friction does not depend upon the size of the surface, but upon the pressure. That is one of the laws of sliding friction. There are others laws concerning friction, but we will not give them now.

THE IMPORTANCE OF FRICTION

will be seen when we consider that *one-third* of the power of machinery is used in overcoming friction. Hence to reduce friction to the least possible, various contrivances are used. There is more friction between two surfaces of the same metal than between different metals. An iron shaft will run in a bearing of brass with less friction than in an iron one. If the wheel of our wagon does not run readily, we know that there is friction at the hub; we apply grease, and that diminishes the friction, the various articles used to reduce friction are called

LUBRICATORS,

a word which, like friction, comes from the Latin, and means, *to make slippery*. A number of lubricators are used: oil, lard, tallow, soap, black-lead, and even water. But in many cases, what are called "friction wheels" are used, though the better name would be anti-friction wheels. An axle of a large wheel is made to turn upon two wheels placed together as seen in figure 1, which shows an axle resting upon the rims of two wheels. As the axle turns, the wheels turn too, and the friction is only at the axles of these small wheels. It is common to hang a grindstone in this manner, as no doubt many of you have seen. Figure 2 shows the contrivance for a grindstone, the stone, however, is not there; what might be taken for the stone is two iron plates, which are made to screw up against the stone, one on each side; the friction wheels where the crank is are covered by a

Fig. 1.—FRICTION WHEELS.

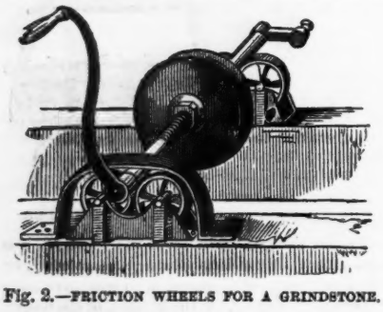


Fig. 2.—FRICTION WHEELS FOR A GRINDSTONE.

guard to keep the clothing of the one who turns from catching, and also from getting soiled. The least known friction between two substances is between polished steel and some of the harder precious stones, from the cheap amethyst up to precious rubies and diamonds.

"JEWELLED WATCHES"

are not watches ornamented with jewels, but those in which the axles of the wheels run in jewelled bearings; even very common watches have some of the more important bearings fitted with cheap jewels. Knowing that so much pains is taken to remove, or overcome it, you may be tempted to say I wish there were no friction.

But that would be a hasty wish; if it could be granted there would be a queer state of things. Our wooden buildings and interior woodwork would fall apart, as it is only held together by the friction between the wood and the nails; you could not walk without slipping up; the vessels could not go to sea, for all their ropes would untwist; the locomotives could no longer pull their trains—indeed, the difficulties we some times find on an icy morning would be as nothing to it. This world is very well arranged as it is....When you strike a ball that is at rest with your bat, the motion of the bat is imparted to the ball, and off that goes. If you strike with the bat a ball that is thrown towards you, you not only stop the ball, but, if you hit it hard enough you send it off in an other direction. This is one of the many instances that illustrate the

COMMUNICATION OF MOTION.

If you place on the table one of two ivory balls of equal size, or even two marbles, and roll the other against it, if the balls strike fairly the one that is hit will move on, while the one that gives the blow will stop, it having given up its motion to the other ball. The same thing may be shown by hanging the balls by strings. A still more striking experiment is to take several elastic balls, as shown in figure 3. By drawing out the ball, *h*, to a short distance, and letting it drop to strike *g*, it will give up its motion to *g*, but that can not move, so it imparts its motion to *f*, but that is prevented from moving, and the motion goes on through all the balls until the last one in the row, *k*, is reached, and being free to do so, that flies off as far from the others as *h* was raised before it was let fall. Glass marbles are often used by boys, and these answer well for this experiment; as boys can not readily attach strings to the marbles, they can show the action nearly as well by placing two square straight-edged sticks near enough together for their edges to form a

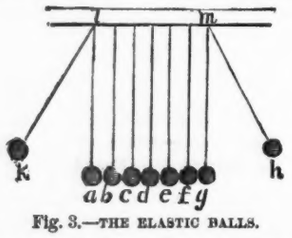


Fig. 3.—THE ELASTIC BALLS.

groove for the marbles to roll along; as the marbles will only touch the corners of the sticks there will be but little friction. But this experiment, figure 3, not only shows that motion is communicated by one moving body to another, but it is one method of showing one of the important laws of motion, that

ACTION AND REACTION ARE EQUAL.

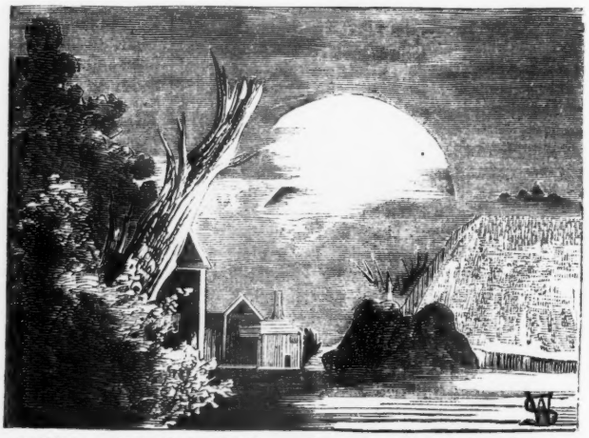
If you strike the table with the hand, the table reacts, returns the blow with a force that makes it unnecessary for you to repeat the experiment. If you fire a bullet from a gun, the force of the gases formed by the burning powder pushes the bullet out with great force, but it also pushes the gun back with equal force against the shoulder, or as is commonly said

THE GUN KICKS.

By making the gun heavier, the powder has to react upon so much more matter, the motion is felt but little.—If the gun be held *firmly* pressed to the shoulder, the recoil seldom hurts much; but if it has any distance to move back before striking the shoulder, it acquires a strong force, and strikes a much greater blow, just as a hammer pushed against a nail has little effect, but if moved a little through the air it acquires a strong momentous force, and drives the nail into the board.

A Curious Time Trick.

Here is a rather neat trick, and one quite new to us. Let a person tell when he ate his dinner, and another, with certain conditions, can know when the same person took his breakfast, or arose in the morning, etc. Suppose Mr. A. had his breakfast at a certain hour, as at seven o'clock, which he does not tell; but gives the hour that he ate his dinner, as at two in the afternoon. Add 12 to the hour given—in this case the sum will be 14. The person is then requested to count back on the dial of the watch or clock (it may be done in the head), *beginning* with the number or hour that he had his breakfast, and which he has not told. In this particular case it will be



A Picture Puzzle is a double one; it usually contains a scene in nature, with the lines so arranged, that after a little looking—or it may be that it will require a good deal of inspection—the object intended comes out, and ever after you can not look at the picture puzzle without seeing it. The one here presented, is perhaps too evident "on the face of it," to be much of a study; but nevertheless, it shows how the artist can, in some measure, hide one thing behind another, and it will serve very well to show how such pictures are made.

7, and as he counts to 14 he stops at the hour of breakfasting. Let us try it again. The boy rose at 8 o'clock (not very early for a smart boy), and had his dinner as late as 3 o'clock. Both of these hours are indicated by the hands on the dial. Being ashamed of his rising, we will suppose, he only tells when he had his dinner. Twelve is added to the 3, and we have 15. He begins at 3, with the rising hour in mind (8), and counts back on the dial until 15 is counted, and this comes to 8, the hour of rising, and his tardiness is exposed. The counting back is indicated by the figures outside of the dial. If you try it in all possible ways, the truth will out, no matter what the hour in mind is or the hour selected.

DIAL FACE.

Our Puzzle-Box.

NUMERICAL ENIGMA.—BIBLICAL PROVERBS.

1. I am composed of 80 letters:

The 12, 23, 49, | 77, 44, 61, | 18, 3, 23, 34, 38, | 48, 62, 76, | 6, 26, 32, 33, | 5, 64, | 29, 70, 46, is a proverb of truth.

The 67, 2, 20, 27, 37, | 40, 63, 14, | 43, 19, 49, 11, 16, 32, 1, | 78, 1, | 65, 8, 71, 66, 17, 22, 70, 4, is a proverb of caution.

The 28, | 1, 45, 33, 42, 13, | 24, 73, 32, 20, 21, 69, 75, | 10, 54, | 45, 50, 2, 9, 25, 29, 48, 14, 39, 8, 40, | 15, 63, | 18, 35, 36, | 33, 66, 56, 7, is a proverb of honesty.

The 80, 60, 28, 55, 21, | 23, 72, | 31, | 69, 19, 79, 32, 30, | 5, 62, | 15, 35, 51, | 4, 59, 49, | 38, 53, | 6, 44, 78, 23, 33, 52, | 41, 2, | is a proverb of education.

The 59, | 41, 8, 63, 58, | 21, 73, 47, 57, | 10, 27, | 74, 20, 34, 19, 68, 22, | 37, 70, | 12, 13, | 69, 35, 78, 42, 16, 29; | 43, 33, 28, 40, | 41, 3, 26, 31, 46, | 17, 25, 69, 44, 36, 54, is a proverb of reputation.

The whole is a proverb of Solomon. ISOLA.

NUMERICAL ENIGMAS.

2. I am composed of 40 letters:

My 2, 9, 36, 7, 14, 5, 12, 20, was one of the greatest of military men.

My 38, 31, 16, 9, 8, 33, 40, 21, 17, came from a foreign land to fight for American liberty.

My 18, 11, 23, 3, 29, 20, 23, 1, 31, 38, will long be remembered.

My 10, 22, 20, 19, 9, is the birth-place of the discoverer of America.

My 35, 4, 17, 36, 9, 30, 24, we often think of with sadness.

My 18, 28, 15, 23, 9, is one of the oldest nations on the earth.

My 18, 14, 39, 6, 37, 34, was the founder of France.

My 19, 13, 32, means away.

My 16, 25, 26, 27, is a member of the body.

My whole is an adage that all young folks ought to remember. KEN. C. HILL.

CHARADE.

A very little word, my first,
Used constantly each day;
A simple pronoun names my next,
Though 'tis not "you" or "nay."
And now from out some sacred spot
Rises my solemn whole,
To calm and fill the heart with peace,
Or elevate the soul.

CROSS-WORD.

My first's in the blossom but not in the tree,
My next's in the ocean but not in the sea,
My third's in the pantry but not in the shelf,
My fourth's in another but not in yourself,
My fifth is in finger but not in thumb,
My sixth is in orange but not in a plum,
My seventh is in cottage but never in a hut,
My eighth is in acorn but not in a nut,
My ninth is in shoulder but not in an arm,
My tenth is in pasture but not in a farm,
My eleventh is in village but not in the town:
My whole is a poet of ancient renown.

SCATTERED SQUARE.

(Make five or more square words from the following well-known verse of poety, by taking four letters from the first line for the first word of the square: Four letters from the second line for the second word; four from the third line for the third word, and four from the fourth line for the fourth word.)

Old mother Hubbard went to the cupboard
To get her poor dog a bone,
When she got there the cupboard was bare,
And so the poor dog had none.

HALF SQUARE.

1. Is sure to come in the spring.
2. "Aft gangs agee."
3. An animal.
4. A preposition.
5. A measure.

ANSWERS TO PUZZLES IN THE DECEMBER NUMBER.

BIBLICAL DOUBLE ACROSTIC. *Esther—Darius.*

E—lda —D
S—heb —A
T—abo —R
H—agga—I
E—lih —U
R—hoda—S

ANAGRAMATICAL OMISSIONS.—1. Enemies. 2. Destroyed. 3. Onslaught. 4. Confidentially. 5. Malevolent. 6. Consternation.

METAGRAM.—*Skate*, from which may be made stake, steak, Kate, take, tea, eat, sat.

CONCEALED NOUNS.—1. Flagon, hem, ewe, ewer, comb, bat. 2. Cub, banjo, reed, drum, man, fly. 3. Ham, toast, ton, fir, raid, fez, key. 4. Fish, hat, crown, ear, earth, bar, fork, goat, ton.

NUMERICAL ENIGMA.—"Should auld acquaintance be forgot?"

ANAGRAMS.—1. Undesirable. 2. Utensils. 3. Untangled. 4. Clarified. 5. Gridiron. 6. Fashioned. 7. Superior. 8. Commensurate. 9. Repudiated. 10. Invalidate.

DOUBLE DIAMOND.

M
CAR
CANIS
PARSNIP
WAIST
TOE
N

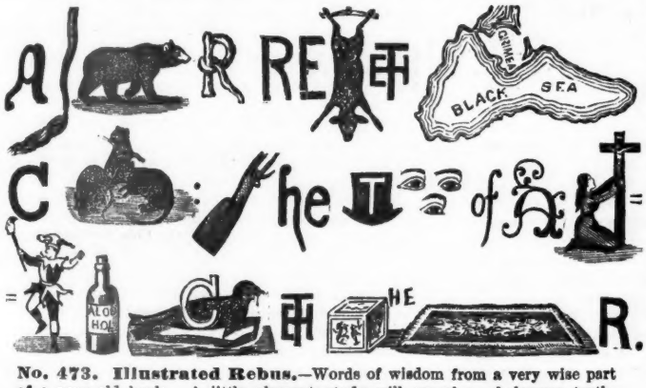
PI.—A little nonsense now and then,
Is relished by the wisest men.

COMBINATIONS.—1. Asafœtida. 2. Minerva.

No. 471.—ILLUSTRATED REBUS.—If you would appear well, be natural.

Pop Corn.

When there is a little party of children gathered together, to spend a pleasant winter evening, capital amusement can be had with a corn-popper, and some pop-corn. It is such fun to see the little hard grains, turn themselves inside-out with an explosion, as the popper is gently shaken over the hot coals. Only a few kernels of the corn are put into "the wire cage on a stick," and in a few seconds the popper is as full as it can hold of nice, fresh, hot pop-corn. Who does not like to eat it, and who can not eat just one more nice "pop"? It seems as if "there is always room for one more." Pop-corn is nice enough when fresh and alone, or with a trifle of salt to season it, but when mixed with enough warm molasses candy to make the grains pack into great balls, it becomes something very attractive in both appearance and taste. We remember one time being guilty of excessive eating of pop-corn—a good many have a weakness that way—and some friends, wishing to show an appreciation of our efforts, prepared a pop-corn ball about the size of our head—and put it on the table. We had pop-corn for nearly a week, and that of the nicest kind. There was no cotton in the center as was looked for—all solid, and of the best quality. Every child likes pop-corn, and we suggest that those boys who do not usually grow it, had better look around for some good sort for seed and next spring plant a small patch of ground. It tastes all the nicer, and perhaps pops better if raised by your own hands.—Try and see if you can not raise a good crop to pop.



No. 473. Illustrated Rebus.—Words of wisdom from a very wise part of a very old book. A little pleasant study will reveal a wholesome truth.

A Boy's Composition on Winter.

Winter is the time of the year when it is real cold. There is lots of snow, too, where we live, and most of the neighbors are drawing logs to the saw-mill and chopping wood. We draw our wood from the woods on a long bob-sled made to draw wood. There are horses to the sled, and I drive them sometimes, but usually hitch my new sled, which I got at Christmas, behind the load, and get tipped over sometimes. The last time when we were coming down the hill, and John made the horses trot, I went head over heels into the gutter, and John did not stop for me but just laughed.

Winter is also the time for going to school, and having a great time snow-balling at recess, and some of the big boys strike pretty hard sometimes. Some of us have built a snow fort, and when we are in it we feel safe unless they try to take the fort, when we have to run for our lives. The girls do not like snow-ball much, but get their faces washed in snow, which I think is just as bad. Winter is the time when the days are short and the evenings very long. The days are not more than half as long as in summer, and the nights are twice as long to make it all square, I suppose, but I never staid awake to see. Winter is the time when we have buckwheat cakes; and pretty soon we will begin to have early lambs, and take care of them in the house; at least we did last year. Grandfather says the winter of '37, I think he said, was the coldest he ever saw, but if it was much colder than last Thursday night, it must have been "a regular snifter," as old Jim Cooper said. Winter is a good time to go visiting if it were not for the chores. Really the best part of winter is when it begins to get warm again, and the birds come back, and the leaves begin to grow. I don't think we would, many of us, like to have winter all the while. We have enough to suit me.

DRAWING LESSON UPON THE SLATE.

The Third Drawing Lesson.

In our first and second lesson we gave for practice figures that had only straight lines, ending with the table and chair. Such pictures, though they may be easy to draw, are not very pretty. It is when curved lines are present in the outline that an object is pleasing to the eye. We find very few bodies in nature that are entirely bounded by straight lines. The earth as a whole is nearly a sphere, not "flat like a pancake," as the ancients thought. A man would be considered crazy if he were trying to find a square pumpkin, or an animal with no curves in its outline.—To know how to form curves, is then one of the essential things in drawing most of the objects which we see around us. For the purpose of illustration, we have placed a number of things—as great a variety as possible—upon a small slate, which many of our young readers will doubtless copy upon their own.—If we could see all these sketches together, especially the *first trials*, what an interesting picture gallery it would be! The easiest object, and the one which most will take first, is the pear; it is about as simple a thing as could be selected, being easier than a circle, if the latter is drawn without anything to guide the pencil. It will be seen that straight lines do not take part in the outline of this fruit—and what fruit does have flat surfaces. You would have to grow a watermelon in a box to make it square, and then it would probably burst through and take on a rounded form. The pear being drawn, it is a question which would be the next choice. The trumpet combines straight and curved lines, and also illustrates, that lines may disappear by passing behind some object and come in view again. One side of the upper end of the trumpet is hidden from view by the larger lower portion which is upon this side of it. Draw the front lines first, and then fill in the others, by making the bottom first, and so on to the top. The jar is not so hard, but will require considerable time and much care, as it has a number of straight lines close together, and if they are crooked the whole will look badly. The Morning Glory will not be found very difficult after the outline of the flower is once made; by the outline is meant the outer edge of the upper flaring part. It may be the easiest to begin by making the lines which run like umbrella bows from the center, and finish with the rim. Here the attachment of the upper part of the flower to the tube is shut out of view by the portion which spreads out towards the reader. The "pussy" will require some patience in the making of her eyes—but she will hold still until all are done with her. Begin with the head, then the neck, back, and legs. Put in the eyes and fix up the whiskers the last thing. The butterfly will be easy, so far as outline is concerned, but to put in the bars and dots on the wings much care is to be taken to get them of the same size and shape on the right and left wings; the beauty of the picture depends almost entirely on the markings. For some pupils the turkeys will furnish a subject for a whole evening, and if one of you spends several upon it will not hurt the turkey, and will do you good. Try and try, again and again, until it can be drawn in good shape in quick time. The face is the last part of the lesson, and in some respects the most difficult. Any one can put lines together so that an ordinary person will know it is intended for a man, but to arrange the lines to produce the likeness of some particular man is an entirely different thing. Probably this center-piece will furnish work—and pleasant work—for many pencils before the young draftsmen are satisfied with their work. We may turn the slate over at some future day, and show what there is on the other side.

Icicles—How are they Made?

If a person, upon looking out of the window, should say—as he might at this hour—"What large icicles are forming on the eaves of the barn!" one could tell pretty well what the weather is, and has been. What are icicles?—Perhaps some of you will answer: "They are sticks of ice, long—long enough for canes sometimes—usually more or less ridged and rough, tapering down to a pretty sharp point—every body knows what icicles are!"—How are they formed?—Some say they grow, but do they grow as children do, or cats, or even corn or apples? Do they grow on the inside or the outside? How does an icicle start?—But to answer this question, is the weather freezing or thawing when these hanging sticks of ice begin to form?—Freezing, of course; but there must be water running down the roof and off at the eaves, to begin with. Icicles form then after a thaw, when the weather sets in cold and the temperature is below freezing. As the drops of water arrive at the edge of the eaves, or "the jumping off place," they become so cold that they can not jump but become solid. Along come some more drops, and spread out over those that have gone before and have frozen stiff, and become a thin film of ice, but the tendency to run down causes the stick of forming ice to lengthen out towards the ground by the water running down and freezing at the end. The water keeps coming down, and as it strikes the ice of the icicle it runs along, a film freezing all the time. Thus it increases in size and length by the constant freezing of layers of water on the outside. If the temperature is just a little below the freezing point, the icicle will be longer and more slender

than when the change of weather is sudden and the cold is severe—they will then be quite short and "stubbed." Some children are very fond of eating these cold hard sticks, but they are not good.

One of the 'Ologies.

Boys and girls are not to be blamed for thinking that this world is full of pretty long words, and not only long, but hard ones to spell, pronounce, and understand. Not long ago, some little one, not so young but she knew a great deal about some things, thought that most of the "study books" were on some *'ology* or other. She is more or less right. We have Physiology and Lithology, Geology and Zoölogy, Philology and Entomology, Theology and Meteorology, Mineralogy and Anthropology, Ethnology and Psychology, but we need not give any more. These words end in *ology*, and this word, like many others in our language, comes from the Greek. The meaning of this termination, or ending, as you may please to call it, is *discourse* or *treatise*, a thorough explanation—a complete description "a telling about the thing." Let us look into this matter of the *'ologies* by taking one; as, for example, *Pomology*. Children are more *Pomologists*—there is another big word!—than perhaps Anthropologists or Geologists, though I have known some very good young Geologists. What does *Pom* mean? we know a little about the rest of the word—it comes from the Latin language which the old Romans talked, and means *fruit*. If we put the meaning of the two parts of our word together, we get *fruit discourse*, or, in other words, a complete treatment of the subject of fruits. As soon as we see the meaning of the word it is not so hard—words look blank and hard when we do not understand them. Suppose some person has made a great study of fruits, as pears, apples, etc.; he ate them when a boy, perhaps loved the subject so much that he even went into his neighbor's orchard to get specimens for investigation, and after a number of years of studying the various kinds, seeing how they differ from each other, time of ripening, time of keeping, and many other things, he should put all his knowledge of fruits into a book, what should we call the book? We might say this is So-and-So's book which treats on the different kinds of fruits, their size, color, taste, and keeping quality, etc., or we might simply say this is "Mr. So-and-So's *Pomology*."—Now if any boy or girl is trying to learn the names of the various kinds of apples and other fruits, by asking the father or mother, or by going to a fair where such fruits are exhibited, and remembering how this and that kind looks, its size, shape, color, etc., that boy or girl is studying Pomology, and if the study is continued until thoroughly understood, will become a pomologist.

THREE MICE THAT ARE NOT BLIND.

The Merry Mice.

The bright little creatures, three of which are presented in the engraving, have had from early times a reputation for stillness, shyness, hatred of cats, and love of cheese. There is but little friendship between boys, "take them as they run," and the ordinary mouse—and to be fair we must "take him as he runs" too. You will have to take him thus in most cases if he is taken at all. But before we kill the little mouse—and we do not argue that he ought not to be destroyed—let us see if there are not some things about him that are interesting. Let us suppose each reader is so situated that a real, live mouse is in sight, and yet Mr. Mouse does not notice that he is being watched. This thought takes me back to that old, red school-house on the hill, so old and shabby that a tramp would prefer to *put up* in the fence corner than enter; a building where the walls were full of big holes and a host of friendly mice made many daily visits to get their supply of bread and cheese. Have I not watched him with his head at the hole and his sharp eyes, just like beads looking out from under his thin, upright, watchful ears, and then "holding in" with all my might—it was so hard to keep still—see him soon creep, and jump along the floor a few inches at a time until he found that for which he lives—a tender morsel, which had fallen from some child's dinner-basket, or been dropped on purpose for the fun that it would bring. A mouse in school, if allowed to have his own way, watched by happy children's eyes, but not knowing that he is observed, is perhaps the most fertile source of bad lessons that there can be; but it has the good side in that it keeps the pupils still. Yes! "as still as mice"—a stillness that a teacher feels, and will usually remove. Aside from the timid and quiet way in which he gets his spoils, which is cunning in an object so small as a mouse, there is the beauty of his very self. A mouse that has been fortunate enough to enjoy a good living, is plump and pretty; his coat is shiny, his ears are clean, and his *mous*tache (which by the way, means *mouse like* or *mouse-colored*) is long and well kept. A nice mouse of itself—if one could lose sight of how he has made himself look so by petty theft and midnight plunder—as an object of beauty, is worthy of our highest regard. He combines all the smartness of the fox, and the delicacy of the deer; the shyness of the antelope, and the wisdom of the beaver—and all in a little lump so small that he builds his nest in our deserted boot, and rears a family before he is observed. It is an old story that these little creatures so troubled an old bachelor that, driven to despair, he went a long way to a very large city to procure a housekeeper that might be able to drive away the mice. Of the success of the undertaking we are not told—at least, I only remember that through some bad arrangements, on the way home there was a great smash and a tumble down time generally. But this story as it is told only goes to prove that mice at heart are dreadfully bad. I would gladly call them good, if they were so; but

"They climb upon the pantry shelf,
And taste of all they please;
They drink the milk that's set for cream,
And nibble bread and cheese."

Their whole nature must be changed before they can expect to gain the lasting friendship of man. Mice and men may have some things in common, but the mouse's best interests are not man's, and that which promotes the highest enjoyment of man is opposed to the well being of Mr. Mouse. There is an eternal warfare between them, and through that living instrument—the dread of every throbbing, civilized mouse's heart, the sworn enemy of the whole mouse tribe—the cat—man may hope to keep this little wolf from the door. No one, it seems to me, can help admiring the mouse as to the form and texture of his being—his eye is bright, his fur soft, and his outline pleasing; but his disposition is bad. He comes when we do not want him, and goes only when he can injure us no more, or his own personal safety demands it. He looks better eating cheese in a picture than when in flesh and blood upon the pantry shelf. He is never to be trusted, and is not safe until he is dead, and even then it is our wish that he had died away from home. That he is closely related to the rat is almost enough to condemn him; but his own deeds are the ones by which he is judged. It is a sad fact that the mouse was filled with the spirit of adventure during the early Pilgrim days, and came to this country in those old ships to establish a colony in the new world, that is now as wide spread as the Continent. He has been very successful in the work of colonization; it has not been without its struggles and conflicts, and if the whole history of the subject was known it would doubtless be a story of trickery and cunning without intent to kill, on the mouse's side, and self-protection mingled with no little malicious bloodshed on the other—if honestly written by himself it would be "a plain unvarnished (mouse's) *tale*." UNCLE HAL.

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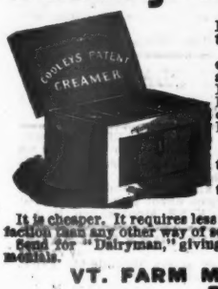

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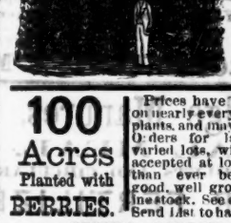

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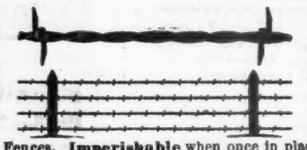

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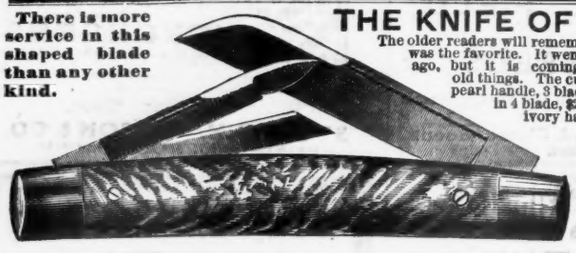

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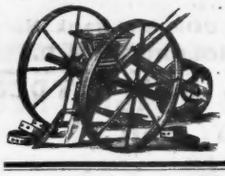

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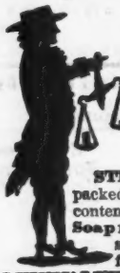

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STRONGEST AND BEST LYE MADE. *This LYE is a FINE POWDER,* and packed in cans with an ordinary slip-lid like our Baking Powder, so that any portion of contents of can may be used without spoiling balance. **12 pounds of Perfumed Hard Soap** made in *twenty minutes without boiling,*—and your wash will be sweet and clean to the senses, without that nasty smell produced when using ready-made Soap or Soap made from other Lye. **One teaspoonful will soften five gallons of hard water.**

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N. B.—The attention of the public is respectfully invited to other advertisements of Hay Presses which have appeared in these columns, all of which make Dederick's patent sectional quadrilateral bale bound lengthways, and by Dederick's patent process and machinery, and some even have the cheek to use Dederick's Continuous Hay Press patent, without which the operation must stop to tie and remove the bale. Dederick has suits pending to enforce these patents, and will in due time prosecute every purchaser for $10,000 damages. Meantime he earnestly remonstrates against this high handed piracy of his property, and warns the public against being swindled into partnership in a steal with unscrupulous characters. Why join a steal for the benefit of thieves and receive an inferior machine, when the same price will purchase a good one of the owner. While Dederick bore the immense expense of introducing these improvements that are such a benefit to the hay interests of the country, these communists opposed him, and now propose to steal not only Dederick's patents, but the capital represented by its introduction into use. Send for free copies of patents in proof of this.

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Improved Baldwin's American Fodder Cutter

The Simplest and Best! Only three Feed Gears! Cuts all kinds of feed, hay, straw, and corn-stalks with ease and rapidity. Power cutters fitted with our **Improved Safety Fly Wheel**, which secures perfect safety to the operator and machine. See large advertisement in Oct. No. of *Agriculturist*. Send for illustrated circular. C. PIERPONT & CO., Manufacturers, New Haven, Ct.

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Herald of Health
FOR 1880.

It will give as its leading articles a series of twelve papers entitled

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February subjects lie nearer the health, the happiness, and the progress of the race.

The following are some of the articles which will soon appear:

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Each Number will be worth the yearly price and save ten times its cost in ill health, for it will teach how to KEEP WELL and retain health to old age, rear healthful, happy children, as well as how to recover health without medicines.

Price $1.00 per Year.

SPLENDID PREMIUM.

Every subscriber sending $1.00 and 10 cents for postage, shall receive free a new book of over 200 pages, by MRS. BERTHA MYER, entitled

How to Govern Children.

This work is the best book of its kind ever written, and worth its weight in gold to any parent. Price $1.00.

Also just out:

Hygiene of the Brain and Cure of Nervousness.

By M. L. HOLBROOK, M. D.

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Part II. contains 28 letters from distinguished persons, including farmers on their physical and intellectual habits.

Price, by mail, $1.50.

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SPECIAL OFFER.
$3.60 For $2.00.

We will send the **HERALD OF HEALTH**, the **AMERICAN RURAL HOME** (a weekly rural paper, price $1.50 a year), and **THE HOUSEHOLD MAGAZINE** ($1.10 a year), for $2.00. For $3.00 we will send the above and **HYGIENE OF THE BRAIN.** Add 10 cents for Premium.

Address **M. L. HOLBROOK,**
13 & 15 Laight St., New York.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from Page 50.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

Bound Copies of volume 38, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

Terms to New South Wales, New Zealand, Australia, Africa, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist*, (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

Hens in Winter.—If eggs are expected during the winter months—and they ought to be—the fowls must be kept warm and well fed. They will not bear crowding, a fact that is too often overlooked. Hens are naturally active creatures, and must have room to run and exercise themselves. The house must be kept clean, and an abundance of fresh air and pure water provided; also a constant supply of oyster shells or bones, broken fine.

Packing Frozen Meat.—Meat that has been frozen, as is often the case with pork and beef killed at this season, should be thawed out before being put into the barrel, as the hard frozen meat does not absorb the salt as it ought, and otherwise would do.

Rolling Wheat After Sowing.—This is a good time of the year to observe the effect of rolling the wheat ground and making it smooth after the grain is sown. If a light snow, or even a moderate one, comes, followed by a wind, it is carried to the fence rows, etc., and lodged wherever it can get a foothold, and if the field is rolled smooth the surface of the ground will be left bare and exposed to the severe cold, and more especially to the destructive influences of sudden freezings and thawings that may follow. If the surface had been left rough, much of the snow would have remained in place about the roots of the plants, and served as a protection against "winter killing."

Milking.—The thoughtful dairyman knows the value of a good milker, and will have no others in his herd. Much of the complaint made by men who have recently bought good milch cows and been disappointed in them, is due to the change of the milker. Careless milking is a fertile source of loss in dairying. The milk should be removed as rapidly as possible to the last drop, and at regular hours. With careful milking, kind treatment of the cows in all respects is of course understood.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Jan. 13th*, 1880, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats*
25 d's *this* m'th	411,000	3,105,000	3,467,000	183,000	312,000	1,128,000
25 d's *last* m'th	526,000	6,127,000	4,036,000	389,000	602,000	916,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	316,000	18,570,000*	4,091,000*	159,000	408,000	1,234,000
25 d's *last* m'th	465,000	23,817,000*	5,902,000*	354,000	611,000	1,505,000

* Including sales for forward delivery.

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1880	411,000	3,105,000	3,467,000	183,000	312,000	1,128,000
23 days 1879	315,000	2,249,000	921,000	68,000	137,000	405,000
SALES.	*Flour.*	*Wheat.*	*Corn*	*Rye.*	*Barley.*	*Oats.*
25 days 1880	316,000	18,570,000	4,091,000	159,000	408,000	1,234,000
23 days 1879	267,000	6,109,000	3,051,000	279,000	307,000	768,000

3. *Receipts at New York, Jan. 1 to Dec.* 31.

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'79	5,582,500	70,878,000	42,361,000	3,305,000	8,478,000	11,189,500	480,000
'78	4,629,300	62,928,000	38,113,300	4,628,300	6,388,000	14,479,600	705,500

4. *Exports from New York, Jan. 1 to Dec.* 31.

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
'79	3,684,400	61,598,900	35,319,700	3,941,600	147,900	521,400	393,150
'78	2,630,400	55,019,400	27,440,800	4,184,850	1,518,800	3,658,900	476,200

5. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush	*Oats.* bush.	*Malt.* bush
Jan. 12, '80	7,792,320	1,378,000	426,191	557,857	557,009	143,891
Jan. 14, '79	3,429,511	1,729,857	572,670	908,425	922,332	91,447
Jan. 14, '78	2,169,552	1,048,859	286,654	935,084	1,600,132	318,512

6. *Stock of Flour Here Dec* 31.

1876.	1877.	1878.	1879.
Total, bbls.....275,900	400,000	372,000	398,000

CURRENT WHOLESALE PRICES.

	Dec. 12.			Jan. 13.		
FLOUR—Super to Extra State	$5 40	@	6 50	$5 00	@	6 00
" Super to Extra South'n.	5 40	@	9 00	5 00	@	8 50
" Extra Genesee	6 25	@	7 50	5 85	@	7 25
" Superfine Western	5 40	@	6 00	5 00	@	5 60
" Extra Western	6 00	@	9 25	5 50	@	9 00
" " Minnesota	6 00	@	9 00	5 75	@	9 00
BUCKWHEAT FLOUR, ₱ 100 lbs	2 30	@	2 65	2 10	@	2 35
BUCKWHEAT, per bush	—	@	65	—	@	62
RYE FLOUR, Superfine	4 85	@	5 50	5 00	@	5 40
CORN-MEAL	2 75	@	3 35	2 60	@	3 30
CORN-FLOUR, per bbl	4 20	@	4 50	4 00	@	4 50
OAT MEAL, ₱ bbl	5 25	@	7 25	5 00	@	7 00
WHEAT—All kinds of White	1 42½	@	1 62½	1 35	@	1 50
" Red and Amber	1 40	@	1 62½	1 15	@	1 55
" Spring	1 15	@	1 50	—	@	—
CORN—Yellow	65	@	70	58	@	70
" White	65	@	70	58	@	70
" Mixed	64	@	66½	56	@	60
OATS	48	@	53½	46	@	51½
RYE	90	@	97	92	@	95
BARLEY	75	@	1 10	70	@	1 08
HAY—Bale, ₱ 100 lbs	45	@	95	60	@	95
STRAW, ₱ 100 lbs	40	@	85	50	@	95
COTTON—Middlings, ₱ lb	13¼	@	13¼	12¾	@	12¾
HOPS—Crop of 1879, ₱ lb	30	@	43	30	@	40
" " 1878, ₱ lb	7	@	20	7	@	18
" olds, ₱ lb	4	@	10	7	@	12
FEATHERS—Live Geese, ₱ lb	57½	@	62½	40	@	55
SEED—Clover, West. & St. ₱ lb	8½	@	10¾	8¾	@	10¾
" Timothy, ₱ bushel	Nominal.			2 40	@	2 75
" Flax, ₱ bushel	Nominal.			1 65	@	2 00
TOBACCO, Kentucky, &c., ₱ lb	3	@	14	3½	@	14
" Seed Leaf, ₱ lb	6	@	35	6	@	40
WOOL—Domestic Fleece, ₱ lb	32½	@	55	30	@	56
" Domestic, pulled, ₱ lb	26	@	52½	30	@	55
" California	13	@	40	18	@	42
TALLOW, ₱ lb	6¾	@	7	6¾	@	6¾
OIL-CAKE—₱ ton	33 50	@	—	35 00	@	—
PORK—Mess, ₱ barrel	12 50	@	12 85	12 75	@	13 00
" Extra Prime, ₱ barrel	—	@	—	10 50	@	—
BEEF—Extra mess	11 00	@	11 50	11 00	@	11 50
LARD, in tres. & bbls, ₱ 100 lb	7 60	@	8 35	7 90	@	8 40
BUTTER—State, ₱ lb	16	@	37	18	@	37
" Western, poor to f'cy, lb	15	@	37	14	@	37
CHEESE	4	@	13¾	9	@	14
EGGS—Fresh, ₱ dozen	16	@	26	12	@	18
POULTRY—Fowls, ₱ lb	7	@	12	6	@	13
" Chickens, ₱ lb	7	@	12	5	@	16
" Roosters, ₱ lb	3½	@	5	4	@	5
Turkeys—₱ lb	6	@	12	8	@	13
Geese, ₱ pair	1 00	@	1 50	80	@	1 25
Geese, ₱ lb	—	@	—	5	@	10
Ducks, ₱ pair	40	@	70	45	@	80
" ₱ lb	8	@	14	8	@	13
RABBITS, ₱ pair	30	@	35	20	@	25
HARES, ₱ pair	35	@	40	20	@	30
DUCKS, Wild, ₱ pair	20	@	2 50	25	@	3 25
QUAIL, ₱ dozen	1 50	@	2 25	1 25	@	1 75
PARTRIDGE, ₱ pair	20	@	50	40	@	75
PIGEONS, ₱ doz	2 00	@	2 50	70	@	1 00
GROUSE, ₱ pair	60	@	1 00	75	@	1 12½
VENISON, ₱ lb	9	@	12	8	@	12
APPLES, ₱ barrel	1 50	@	3 00	1 75	@	4 00
PEARS, ₱ bbl	2 00	@	4 00	—	@	—
POTATOES, ₱ bbl	87	@	2 00	1 25	@	2 00
" Sweet, ₱ bbl	2 00	@	3 25	2 75	@	3 25
TURNIPS ₱ bbl	75	@	1 00	75	@	87½
BEANS—₱ bushel	1 80	@	2 15	1 45	@	1 95
PEAS—Canada, in bond, ₱ bu	—	@	85	—	@	86½
" new, green, ₱ bag	1 75	@	2 25	1 80	@	1 85
BROOM-CORN	4	@	9	4	@	9
CARROTS, ₱ bbl	75	@	1 12½	75	@	1 00
BEETS, ₱ 100 bunches	75	@	1 00	87½	@	1 25
CABBAGES—₱ 100	3 50	@	5 00	4 00	@	7 00
ONIONS—₱ bbl	2 50	@	4 00	2 25	@	4 50
CRANBERRIES, per bbl	4 50	@	7 00	6 00	@	9 00
SQUASH, ₱ bbl	75	@	1 50	1 12½	@	1 50
CELERY, per dozen bunches	75	@	1 00	75	@	1 00

With the opening of the new year, business in Bonds and Stocks has been quickened by the restoration of ease in Money, which had been quite stringent through the last few weeks in December, chiefly because of the preparations, then in progress, for the 1st of January interest and dividend disbursements, the aggregate of which has been very liberal, thus reflecting, in part, the successes of the past year, in the industrial and commercial lines,—the promise of which for the year now fairly entered upon is viewed as even more encouraging.... Produce and Merchandise interests have shown a fair degree of activity, for the season. Metals have been the prominent feature, in the way of renewed and very decided buoyancy in values, through the unusually extensive operations, especially in Iron, Iron and Steel Rails, and Tin, for prompt and forward delivery, closing in favor of sellers. Hardware has been attracting more attention. Boots and Shoes have had an increased call for Spring styles. Hides have been less freely dealt in but have not varied much in price. Leather has been quite brisk; Sole having met with a ready sale, but at some slight reductions in quotations, under more liberal offerings. Seeds, Hops, Hay, and Straw have been very moderately sought after. Dry Goods have been in fair request, and held with confidence. Naval Stores have been more active and quoted higher, but closed less firmly. Petroleum has further yielded in price, on more urgent offerings, without leading to remarkable animation in the dealings, for early or future delivery.... Provisions have been in more demand, largely in the speculative line, on a fluctuating market, closing, as a rule, with more firmness. Lard has recently attracted more attention from shippers, particularly Western Steam, for the Liverpool market. Butter has been in good request at generally full figures. A livelier inquiry has been reported for Cheese, which has been advanced rather sharply.... Cotton has been fairly active, almost wholly in the option line, but at variable prices, leaving off with an upward tendency.... A fair demand has been reported for Wool, prices of which have been remarkably well supported, in instances showing a gain, since our last, and closing quite firmly, on comparatively limited supplies, which, it is apprehended, will be found inadequate to meet the requirements of consumers, up to the incoming of the next clip.... Tobacco has been quoted steadier, on a freer movement, in good part for shipment.... In the Breadstuff line, a noteable reaction has occurred, since our last, from the buoyancy of the preceding month, values suffering serious depression, through the falling off in the export demand, as reflecting the heaviness in the foreign markets, the extraordinary accumulation of stocks on the seaboard, and in the interior, (making what are called the visible supplies of Wheat, —embracing the hoards at lake ports, in transit, and on the seaboard—at latest dates, 29,620,000 bushels; — of Corn, 11,500,000 bushels; of Rye, 1,136,000 bushels; of Barley, 4,334,000 bushels; and of Oats, 3,074,000 bushels, against, on December 13, an aggregate of 28,688,500 bushels Wheat, 10,079,400 bushels Corn, 1,162,000 bushels Rye, 4,668,600 bushels Barley, and 2,672,200 bushels Oats;) and the baneful influence of speculative manipulation, which has arrested the outflow of produce from our ports, and led to a further material decline in ocean freights, which on Grain fell to 3d. per bushel by steam for Liverpool (though rallying near the close to 4d.), and 4s.@4s.3d. per quarter, of 480 lbs., by sail for Cork and orders, and proportionately to other destinations. Home trade dealings have also diminished in value. At the close, the advantage, almost throughout the market, was unmistakably in favor of buyers, especially in the instances of Wheat, Oats, Rye, and Flour. Wheat was pressed for sale at the extreme close, and Winter grades, under the pressure, receded, on Monday, 12th of January, 2@3 cts. a bushel on an active but feverish market, leaving off with a downward tendency. The purchases of Wheat, as reported on that day, were to the aggregate of over 1,450,000 bushels, of which only about 140,000 bushels were for early delivery; the bulk of the transactions having been in the option line, and these options exclusively on the favorite grades of No. 1 White and No. 2 Red, the February and March deliveries now meeting with most favor, as postponing pay day to the furthest, and thus extending the privileges of speculative operators. Spring Wheat has recently entered to an unusually limited extent into the daily sales,—the views of buyers and sellers having been too wide apart to admit of activity. In sympathy with Wheat, Flour, Rye, and Oats gave way in the latest dealings, and closed weak. Corn participated in the reaction, but suffered less severely, and for early delivery, hardened a little, in the final movements, which were, in good part, on the export account.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Dec. 15	10,187	350	1,728	23,964	32,271
Dec. 22	12,814	300	1,330	29,797	34,261
Dec. 29	9,463	250	1,016	19,154	25,335
Jan. 5	11,039	151	1,056	22,804	26,411
Total for 4 Weeks	43,503	1,051	5,130	100,719	118,278
do. *for prev. 4 Weeks*	41,066	1,253	6,375	123,626	182,361

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	10,873	263	1,282	25,180	29,569
do. do. *last Month*	10,266	314	1,593	30,906	45,590
do. do. *prev's Month*	13,736	272	3,251	39,443	44,248

Prices for beeves the past four weeks were as follows:

WEEK ENDING	*Range.*	*Larger Sales.*	*Aver.*
Dec. 15	6¼@11¼c.	8¼@ 9¼c.	9 c.
Dec. 22	6¼@12 c.	8¼@ 9¼c.	9 c.
Dec. 29	6¼@12 c.	8¾@ 9¼c.	9¼c.
Jan. 5	6 @11 c.	8¾@ 9¼c.	9 c.

Beeves.—The market opened dull and unpromising, and the foreshadowing of a poor business was fully realized. A slight improvement occurred when the Christmas cattle came in and lifted up the general run of the market, but this was soon lost, and dullness again ruled. The best price and highest estimated average was for some Kentucky premium steers which brought 12 cents per lb. on 60 lbs. to the 100. The range for the last day of the month was lower, ordinary steers sold per 7¼ @ 8¼ to dress 55 lbs.; good to choice at 8¾ to 10¼c. for 56 to 57 lbs.; extra brought to 11 @ to dress 57 lbs. The export business has been quite brisk, from 6,000 to 8,000 quarters being shipped weekly, with about 2,000 carcasses of mutton and some hundreds of dressed hogs. The total receipts for 1879 have been 568,681 cattle; 8,231 cows; 168,340 calves; 1,540,180 sheep and lambs, and 1,711,094 hogs.... **Cows.**—Receipts have been lighter and prices lower; trade being dull with a slow demand. Prices range from $30 to $50 per head for poor to good, and $60 to $65 for extra milkers.... **Calves.**—A good demand with decreasing supply has sustained the market and prices have been strong, and advancing for grassers, which sold for 2½@3 cts. per lb. live weight; milk fed calves at 3½@4¾ cts. per lb., and veals at 5@8 cts. per lb. for fair to good, and 8½ cts. for extra.... **Sheep and Lambs.** The market has ruled strong all through the month with advancing prices. Sheep have sold at 4¾@6 cts. per lb. live weight for common to good, and 6¼@6¾ for choice ewes and extra wethers. Lambs have gone off readily at 6½@7½ cts. per lb. At the close a strong feeling prevailed.... **Swine.**—A good demand and firm prices have marked the month's business. Live hogs have sold for 4¾@5¾ cts. per lb., with a firm market at the close.

The Horse Market.—The business of the past year has been larger and more active than at any time since 1874. The supply of horses has also been better, and shippers have had a better margin for profits. Heavy draft horses have been most in demand; this is a straw which shows the direction of the current and which should be noted by breeders. Fine coach horses have been competed for by both native dealers and exporters, and have met with ready sale. This is another valuable indication. Common horses have been neglected except by local farmers and have suffered as they always must do in competition with used-up car horses which go into the country at low figures on the chance of recuperation. The year's exports reach to 2,461 horses and 3,002 mules, many of which went to South Africa for the British army. The imports were 47 Normans from France; 15 Thoroughbreds from England; 65 Shetland and 4 Norway ponies. Business opens quietly for the new year with moderate demand and low prices, except for fine stock.

Prices of Feed.

Cotton-seed meal	per ton.	$30.00
Linseed-cake meal	"	37.50
Middlings	"	24.00
Bran	"	23.00
Corn-meal	"	23.00

Prices of Fertilizers.

Nitrate of Potash (95 per cent.), per lb.	9 @9¼c.
Sulphate of Potash (potash 44 per cent) per lb.	3½@4 c.
do. do. (potash 27½ per cent) per lb.	1¾@1¾c.
German Potash Salts (potash 12 to 15 p. c. p. ton.	$15.00@18.00
Muriate of Potash (potash 50 per cent), per lb.	2 @2¼c.
Nitrate of Soda, per lb	4¾@5 c.
Sulphate of Ammonia (25 per cent.), per lb	4c.@4¼c.
Dried Blood (ammonia 13 per cent) per ton	$40.00@45.00
No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₱ ton	$56.50
do. do. Lobos, do. do. do	47.50
do. do. guaranteed, ₱ ton, cargo K	56.00
do do. rectified, per ton, 9.00 p. c.	65.00
do. do. do. 3.40 p. c.	51.00
Soluble Pacific Guano, ₱ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,	55.00
Mapes' Complete Manure (clay soils) per 1,000 lbs	25.00
do. do. do. (light soils) per 1,000 lbs	25.00
do. do. do. "A" Brand, (wheat) ₱ 1,000 lbs.	30.00
do. Bone, strictly pure, meal per ton	42.00
do. do. do. medium do.	36.00
do. do. do. dissolved do.	42.00
do. Fruit and Vine Manure do.	35.00
Stockbridge Rye Manure, per ton	45.00
" Wheat do do	45.00
" Seeding Down Manure, per ton	40.00
Bowker's Wheat Phosphate, per ton	40.00
Baugh's Raw Bone Phosphate, per ton	33.00
Baugh's Manure for Tobacco and Grain, per ton	45.00
Walton, Wham & Co.'s Raw Bone Phosphate	40.00
Gypsum, Nova Scotia, ground, per ton	7.50

Killing Hogs.—This work should be done in as quiet a manner as possible, that the animals may not become excited—in a fever heat—just before being killed. Avoid running or driving them rapidly for any distance, as the quality of flesh is thereby injured.

Some Dairy Statistics.—There are over 13,000,000 milch cows in the United States, from which over 350,000,000 pounds of cheese and 960,000,000 pounds of butter were made during the past year.

The Pear-Leaf Blister.—This wide-spread disease of pear trees is now considered as the result of the attacks of a minute insect, a mite called by a German naturalist *Typhlodromus pyri*. Prof. Burrell, of the Illinois Industrial University, has made a special study of this subject, and finds that the mite is peach-colored, with only four legs, and hundreds of them are found in a very small space within the diseased tissue of the leaves. The remedy suggested is to cut back the last year's wood and burn the parts removed; this is sure death to the mites which are crowded between the bud scales.

Eclipses for 1880.—There are to be six, namely: (1) A total of the sun, Jan. 11, visible through portions of Utah, Nevada, and California. (2) Total of the moon, June 22, invisible in eastern portions of the United States. (3) Annular eclipse of the sun, July 7, invisible in North America. (4) Partial of the sun, Dec. 1, visible only in the Southern Hemisphere. (5) Total of the moon, Dec. 16, invisible in the eastern United States. (6) Partial of the sun, Dec. 31, visible in eastern United States. Thus the last day of the year brings the majority of our people a partial eclipse of the sun, and the only visible one.

The Ice Harvest.—The time for filling the ice-house will soon be over, and the harvest of ice should be made at the earliest day. To those that have never had the convenience, nor practised the economy, of a supply of ice for the hot months of summer, let it be said that it pays, and a house built now will not be too late.

Salt Marsh.—"P. W. H.," Aransas Co., Tex. Unless you can, by means of tide-gates or otherwise, control the inflow of salt water, you can make no valuable improvement in the quality of the grass produced. If the water can be excluded, Orchard-Grass, Timothy, and other "tame" grasses may be sown after the rains have freshened the surface. If this can not be done, encourage the natural grasses of the marsh by removing brush and other plants than grass, so far as practicable, for the natural growth is of far more value than is generally supposed, not only for bedding, but for feeding.

The Western N. Y. Horticultural Society.—There is no Society whose meetings we have a stronger desire to attend, or whose published proceedings—always brought out promptly, by the way—we read with more interest than this. Its meetings are held at Rochester, one of the great horticultural centers of the country, and when the cultivators from all the western parts of the State meet those belonging in that city, they form a gathering that, for practical knowledge of the subjects they discuss, can hardly be equalled elsewhere in the country. The meeting this year was held after this number went to press (Jan. 28th), but it is safe to say in advance that the proceedings were worthy of the occasion, it being the 25th anniversary of the organization of the Society; a quarter centennial celebration, demanding an extra effort on the part of the members.

Where can Cranberries be Grown?—"A. G. S.," Fayette, Iowa, has a piece of springy ground on the banks of a river, usually overflowed in spring, and is wet most of the season, and thinking that Cranberries may be grown there, asks us how to set about it. We can best answer this and other similar letters by giving the essentials in Cranberry Culture. The Cranberry plant, or vine, will *live* almost anywhere when once established, but for its profitable culture, there are certain essentials, in the absence of either one of which no cranberry-grower would undertake it. The soil must be either peat or muck, so situated that it may be drained for 18 inches below the surface, and an abundance of water at hand so situated that the ground may be flooded to the depth of some inches at once—added to these there must be at hand a supply of pure sand, enough to cover the whole surface of the bed for an inch or two. Without these success can not be hoped for, and it is not always realized when these are all present, as there are various accidents and troubles that may defeat the cultivator.

Poplar Sprouts.—S. Lea, writes that at the base of his poplar trees, there are some shoots, and he would like to plant them if they will grow, but they have no roots. He wishes to know what to do and how to do it. A poplar will grow almost as well without roots, as with. Cut them any time before the buds start, as small as a lead-pencil, or as large as the arm, and six inches or six feet long, set them out or drive them in where they are wanted, and they will attend to the rest of the work.

Cannot Tell.—"A Reader" asks why the vine of the bean turns one way and that of the hop in the opposite direction in their twining around the supports. Of course it is not very satisfactory to say it is the nature of each to climb in its own way—but that is about as far as we can go. Why will a chick run towards the hen that clucks for it, though it be for the first time, and the hen is not in sight? There are many things in nature that are beyond any exact explanation.

Pleuro-Pneumonia has broken out in New Hampshire, and the Governor has appointed a Board of Commissioners to investigate the appearance of the disease. A number of cattle have died at Haverhill in that State, and grave fears of its spreading are entertained.

Corn Nubbins for Kicking Cows.—There is an old farmer in Vermont who buys all the kicking cows he can find, and cures them with kind words, abundant use of the currycomb, and feeding of corn nubbins. We are at a loss to decide which of the three agents is the most important, but think there is more in the first two than many may think. Harsh words and blows would more than overcome the soothing influence of the nubbins. Even cows can be influenced by example.

Pressure on a Cistern.—"T. B. P." If a cistern is empty, and the ground full of surface water, the pressure will certainly be considerable, and may be dangerous, if the cistern is not well constructed. If it is made of the shape of half an egg, the pressure will not injure it, that being the strongest possible form. If it is round with a flat bottom, the sides will be sound but the floor may be burst in. In such cases it would be well to provide against the danger by making the cistern of the strongest shape, and laying the bricks in the most substantial manner.

The Bradshaw Plum.—"J. P. W.," Fennville, Mich., asks us to give the merits of this plum, as it (the tree we suppose), is being offered for sale in his section. The Bradshaw is a fairly good, large, blue plum, ripening in August. In making a selection of 10 varieties, in the order of quality, we should not include the Bradshaw. In selecting 10 for profitable market culture, this would be included, and stand towards the head of the list. If offered as being "Curculio proof," or "Black-Knot proof," or remarkable in any other way, it is misrepresented.

Fertilizer for Cotton.—"J. R.," Kaufman Co., Texas. Peruvian guano is one of the best fertilizers for cotton. There are special manures made for this crop by the manufacturers of fertilizers, whose addresses may be found in the advertising columns; these fertilizers are cheaper than guano, and sometimes more effective, being richer in potash, the element that is most needed.

Book on Cotton Culture.—"R.," Lawrence, Texas. The most modern information about cotton culture is contained in the Manual of Agriculture by E. G. Wall, of Mississippi. The culture is very simple, and a whole book is hardly necessary to tell all the story.

Chalk and Water in Milk.—The daily city papers often call attention to the quality of the milk furnished to city customers. There is abundant reason for doing this, and they can not too frequently insist, that milk must be furnished just as it comes from the cow. But these articles lose much of their force by implying, indeed some of them directly asserting, that a mixture of chalk and water is served in place of milk. This is absurd; the most skilled manipulator can make no mixture of any form of chalk, that will be no more dense than ordinary milk, from which the chalk will not completely settle, upon standing for a few hours. We doubt if there was ever a pint of milk sold in N. Y. City, in which chalk was used as an adulteration. In London, milk and other adulterations were carried to such an extent, that Parliament had the matter investigated some years ago. Doct. Hassall, who was officially connected with these examinations, and has probably examined more samples of milk than any other person, says of chalk and starch in milk, while he admits that they may be very rarely used, that "It has not happened to ourselves to meet these substances in milk." Wanklyn, also of London, in the most recent work on the "Analysis of Milk," says nothing about the occurrence of chalk. The fact is, the most serious adulteration of milk is with water. Besides the addition of water, milk is impoverished by the abstraction of cream. These two, the taking off of cream, and putting in water, are the worst that happen to city milk, and these are bad enough. It diverts attention from these real troubles, to talk about improbable, if not impossible "chalk and water."

Gold and Silver.—The United States produced $32,529,920 of gold and $38,623,812 of silver during the year 1879. Nearly the whole of the gold, except 4 millions used in the arts, has gone into employment as money, and about two-thirds of the silver has passed to the mint. In addition to the production, we have imported $75,000,000 in gold, while the exports of it have been almost nothing. It has been a golden year for us.

Mending Rubber Boots and Shoes.—A number have asked how rubber boots and shoes could be patched. Of course any cement used for this purpose must be elastic, and the only thing suited to the work is a solution of rubber itself. Unfortunately, rubber is soluble in but very few liquids, and these are either costly or dangerous to have about on account of their volatile and inflammable character. Probably the best solvent of rubber is Bisulphide of Carbon. (See "A Wonderful Liquid," page 453, November last.) We dislike to publish a recipe that we have not tried, and rarely do so; the following, commended for patching rubber, we have not used for that purpose, but have used it for cementing other articles, and have reason to think it will answer for that. Take one part of Rubber, three parts of Gutta-Percha, and eight parts of Bisulphide of Carbon. The Rubber and Gutta Percha must both be pure; manufactured or vulcanized will not answer; both should be cut fine and put with the Bisulphide in a wide-mouthed bottle with a tight cork. They will require a day or so to dissolve, and will need thorough stirring to make a smooth mixture. Recollect that the Bisulphide and its vapor will take fire very readily, and the greatest caution must be used. Moreover, it smells horribly. The rubber to be joined must be perfectly free from grease, and the parts coming in contact should be rubbed with fine sand-paper. When the patch is put in place it should be held there, by winding a string about it, or in any other manner that will keep it under pressure until the cement is hard.

A Shell in a Tea-Kettle.—"H." says in a visit to the shore of Long Island Sound, he saw the housekeeper put a clean clam-shell or oyster-shell in her tea-kettle to prevent a crust from forming on the inside, and wishes to know if it isn't "an old woman's whim."—Not at all—but founded upon correct scientific principles. Some hard waters deposit, on being boiled, the Carbonate of Lime to which their hardness is due. In time this gradually accumulates and lines the interior of the tea-kettle; we have seen such a crust two inches thick. A shell, which is Carbonate of Lime, is placed in such water, when the water is heated the Carbonate of Lime it contained is deposited; it is in accordance with "the nature of things" that its minutely divided particles should aggregate themselves upon the shell, which is of the same material as itself, rather than upon the smooth iron surface of the kettle, thus keeping the kettle clean.

Treatment for Garget.—"F. S. C. H.," Lawrence, Mass. Garget consists of congestion of the udder, and it is not always caused by overfeeding. Sometimes it may result from a poor condition, and often occurs in poorly fed cows from want of sufficient vigor to control the circulation evenly. The disease results also from cold, excessive exercise, bruises, lying upon cold ground or floors without sufficient bedding, nervous excitement, or any disorder of the circulation which may throw undue pressure upon the glands of the udder. One-quarter or the whole of the udder may be effected. Thus it is readily seen that a specific remedy that will meet all cases can not be given. The cause must be discovered and the appropriate remedy provided. Generally, there is fever, and a dose of 12 ounces of Epsom Salts will tend to reduce that and lead to a recovery; the Salts will also act as an alterative upon the digestive organs, and will be useful in this case also. Accompanying remedies should be bathing the udder with warm water, injecting a solution of Soda to dissolve the curdled milk, or applying Iodine Ointment, which may be had at any drug store, externally to assist in absorption.

Agriculture in France.—The French Legislature has made the study of agriculture one of the regular branches to be taught in her public schools. A familiarity with the growth of crops, etc., is seen by that Republic to be as important as the fact that the earth is nearly a sphere, or the sun is between 93 and 95 millions of miles away from us. But where do they find competent teachers?

German Ivy.—Nothing in the way of living plants adds so much to the cheerfulness of a room as healthy vigorous climbers; and all things considered—ease of culture, rapidity of growth, grace and delicacy of form—the German or Parlor Ivy may well take a leading place.

Celery.—The complaints that come to us of the failure of celery to keep this winter show that the trouble is general. "W. H. B.," Waterbury, Ct., thinks that his trouble was due to late planting, but as he does not say when his was set out, we can not judge. But in general it is not necessary to go beyond the unusually warm weather to find a cause. Celery will grow at a very low temperature, and the weather has been for weeks at a time so mild that the plant would grow. Growth in the trenches is fatal, for its roots being out of the ground, whatever growth takes place at the center, must be at the expense of the other stalks, which become hollow and flabby. Besides this, in such a mass of vegetable matter, the warm weather will soon induce decay. Lovers of celery can congratulate themselves that statistics show that such a winter as we are now having is rare.

Initials in some cases, will answer instead of full names, but not in the U. S. Post-Office. Had we written out a rule, that we were requested to send "by letter," placed it in an envelope and directed it to "H. B. J.," Dayton, Ohio, it is very likely that it would be in the Dead Letter Office. No doubt the writer of the letter, signed only by the above initials, thought we were not very obliging to refuse him a small favor, and we hope he will now learn why we were obliged to do so. "A. C.," of "Stmga," will also learn why his postal had no reply. By aid of an imperfect post-mark, we could make out that the place was St. Marys, Ga., but as there was nothing to help us make out the A. C., we were unable to answer.

Steel Calked Shoes.—If horses fail to stand in slippery places it will be because their owners fail to provide them with some of the several excellent devices to aid them. The Forged Steel Calk Horse Shoe, made by the Bryden Horse Shoe Co., has several points to commend it. The toe calk is very long, and with the others so placed as to give an even bearing to the foot. The inside of the shoe is of such a form as to prevent stones and other matters from catching in it, and the shape of the crease shows excellent workmanship and attention to details. The list of those who have used the shoe with approval includes the names of some of the eminent horse owners in the country.

Coloring Butter and Cheese.—"G. T. S." The coloring of cheese, to meet the notions of certain markets, is very common; to color butter in winter, sufficiently to restore the lacking color, is regarded as legitimate by some of those who make the highest priced product. So long as a perfectly harmless vegetable coloring matter is used no harm can come of it. The color used is Annatto in some form; this is prepared from the pulp that surrounds the seeds of a South American shrub or small tree. The seeds are put into water and fermented, the liquid is poured off and evaporated to a pasty mass, about the consistence of putty; this is made into rolls, covered with some kind of leaves, and sent to market in baskets. Annattoine is the coloring principle separated from annatto, and is in a much more concentrated form. Annatto is sometimes used for dyeing cotton, but the color is not very fast; its chief consumption is in the dairy, and though the amount used by each one is small, the aggregate is large. The principal importer is Mr. L. E. Ransom, of New York, who also prepares it in the form of a butter color ready for use. There seems to be a number of methods of writing the name: annatto, anatto and arnotto being used, and sometimes it is called roucou.

Catalogues Received.

SEEDSMEN.

BENSON, MAULE & Co., No. 223 Church Street, Philadelphia, Pa., send an illustrated list of farm, garden and flower seeds, implements, etc.

B. K. BLISS & SONS, No. 34 Barclay Street, New York, give their catalogue a quaint exterior in Japanese style. The interior shows the usual number of novelties in vegetables and flowers.

WM. E. BOWDITCH, 645 Warren Street, Boston, Mass., sends his wholesale list and retail flower seed catalogue.

FRANCIS BRILL, Mattituck (L. I.), N. Y.—Wholesale list of seeds grown by himself.

W. ATLEE BURPEE & Co., No. 221 Church Street, Philadelphia, Pa., send their "Farm Annual," which, besides being a catalogue of seeds of all kinds, includes stock and implements.

A. D. COWAN & Co., No. 114 Chambers Street, New York, send a very full, neat and clear list of farm and garden seeds and appliances.

D. M. FERRY, Detroit, Mich.—The full and profusely illustrated list of what is said to be the largest seed house in the world, gives views of their new store, the floors of which have an area of nearly five acres!

L. W. GOODELL, Amherst, Mass.—Illustrated list of seeds, bulbs and flowers.

HENRY NUNGESSER, No. 83 Avenue D, New York.—Wholesale list of grass and forest tree seeds.

PLANT COMPANY, St. Louis, Mo.—Very full in seeds of all kinds. An Almanac, a Gardener's Calendar, and useful garden instructions—a treatise as well as a catalogue.

J. B. ROOT & Co., Rockford, Ill. It keeps up its interest in giving pleasant talks about garden matters.

ISAAC F. TILLINGHAST, La Plume, Lackawanna Co., Pa., makes of his catalogue a quarterly called "Seed Time and Harvest." The first number promises well.

E. WYMAN, JR., Rockford, Ill.—Full and neat, with sensible directions for culture.

PETER HENDERSON & Co., No. 35 Cortlandt Street, New York.—As usual, this bears the title "Everything for the Garden," and as it includes Peter Henderson's plant list, its title indicates the contents. Richly illustrated.

NANZ, NEUNER & Co., Louisville, Ky.—A full and illustrated list of seeds, bulbs, plants, etc.

NURSERYMEN.

J. L. DILLON, Bloomsburg, Pa.—Small fruits, with directions for culture.

LESLIE & MCCUNE, Ipava, Fulton Co., Ill.—General list of orchard and small fruits and evergreens.

J. R. LONG, Columbia City, Ind.—Small fruits.

J. D. MOSBY & BRO., Richmond, Va., at the Richmond Nurseries, offer a full stock of fruits, including a number of varieties originating in the State.

J. F. NOERR, Oswego, N.Y.—The leading Strawberries.

E. & J. C. WILLIAMS, Montclair, N. J.—Small fruits, ornamental stock, seed potatoes, etc.

FOREIGN CATALOGUES.

N. L. CHRESTENSEN, Erfurt, Prussia.—Dried flowers, dyed and other grasses, and winter bouquets.

DAVID CLARKE, Brisbane, Queensland, Australia.—Quite a volume of seeds, trees, plants, implements, etc.

MISCELLANEOUS.

E. F. BROCKWAY, Ainsworth, Iowa.—Poland China Hogs, Poultry, with artichokes and chufas to feed them.

A. & T. BROWN, 57-61 Lewis Street, New York.—Shafting, pulleys, etc. Excellently illustrated.

JAMES LEFFEL, Springfield, Ohio, makes the Buckwalter Portable Steam Engine and the Leffel Turbine Water Wheel. The catalogue of this Turbine is a wonder, having nearly one hundred large pages in which a profusion of full page engravings make the wheel so interesting that one at once wishes he had use for one.

ANDERSON REFRIGERATOR LINE MANUAL.—Aug. F. Higgs, manager of the above line, which runs its cars over various routes, publishes its business in a neat pamphlet, in which are given most useful directions for handling all perishable articles.

L. L. REED, Auburn, Ohio.—An illustrated list of thoroughbred pigs, sheep, poultry, etc.

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S. C. DE COU, Moorestown, Burlington Co., N. J.

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Strawberry Plants	Either kind	Raspberry Plants
50 Sharpless	*postpaid*	15 Cuthbert (Red)
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100 Cumberl'd Triumph	LAPHAM	50 Brandywine (Red)
100 Monarch of West	& ANTHONY	25 Gregg (Black)
100 Boyden's Thirty	Clayton, Del	50 Mam. Cluster (Blc'k)
100 Chas. Downings.	Descriptive	**Blackberry Pl'nts**
GRAPE VINES.	Catalogue	35 Kittatinny
15 Concord	Free.	35 Wilson's Early
12 Hartford Prolific	*The Dollar*	35 Dorchester
8 Martha (White)	*Nursery.*	35 Lawtons.

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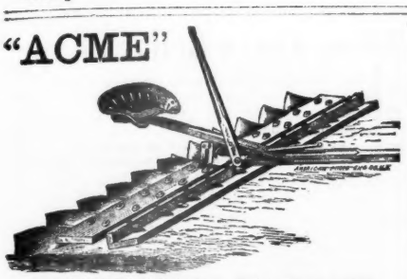

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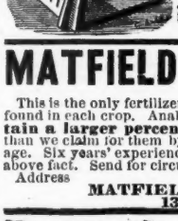

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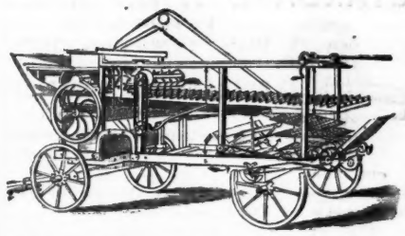

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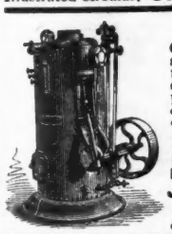

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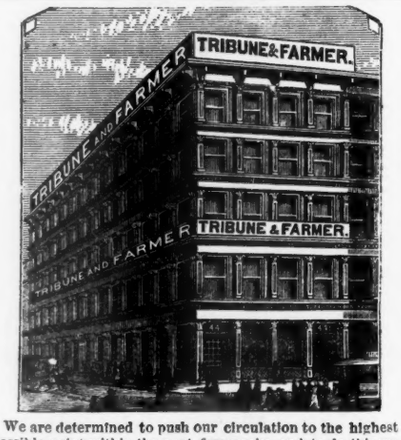

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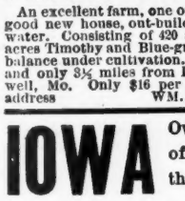

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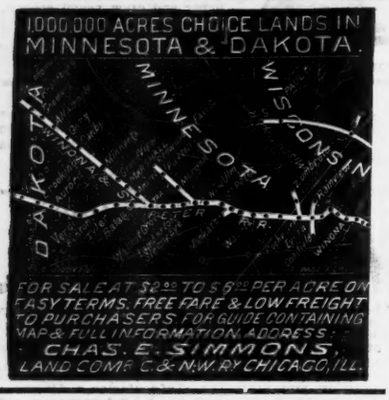
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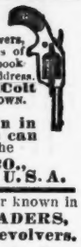

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